The Builder.

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What are we Doing for Public Health?

ON the 7th day of September, now expired,—that is to say, within twenty-eight days after the passing of the "Act to amend the Law relating to Public Health," which bears date 10th August, 1872,—it was enacted by clause 6 of that measure, that "the first meeting of a sanitary authority under this Act shall be held; or," it adds, "at such other time as may be directed by order of the Local Government Board."

We have failed to notice accounts of these important contemporaneous meetings of the new local authorities. One remarkable exception, recorded in our pages on the 21st ult., serves but to prove the rule. The question arises, how was the provision to be enforced? In what practical manner are the inhabitants of every or of any sanitary district, urban or rural, drained or undrained, improved or unimproved, really affected by the passing of the law?

Remembering the extreme degree of interest that was developed in many instances by the election of members of the school boards, on the passing of the Educational Act of 1871, it strikes us as somewhat ominous that hardly a single sound should have fallen on the public ear as to the proceedings ordered to take place on the 7th of September. It may be urged that the education boards were new creations, and that the sanitary boards are but the old union or borough authorities, with powers that are not new, although they are transferred or concentrated. But that consideration hardly tends to increase confidence in the unreported activity of the sanitary movement.

It will be evident to those of our readers who have either consulted the abstracts given in our own pages, or studied the actual words of the Act to amend the laws relating to public health, which was the fruit of the past session, that general sanitary reform is as yet only in what may be called a permissive state. We cannot even see in the new law such a machinery for individual action as was proposed in what, by a remarkable distortion of the English language, was spoken of as the "permissive prohibitory" condition, with reference to another class of reform. The one sole element which is provided by the Bill to spur, or to check, the action of the new Board, is the authorised interference of the Government inspector. But this, also, is only permissive. It is not even promised. There is no method provided by which a medical man, or other person deeply interested in the health of a district, can readily grease the wheels of the slumbering law, or call the attention, except as a matter of personal favour and responsibility, of an inspector to even the most urgent danger.

It must be clear, and can hardly be too loudly urged, that the Administration has thus incurred a large amount of serious responsibility. We shall not be accused of making any querulous or hasty complaint. We urged our friends to support the small measure for which alone time was found. We did not carry with us the full sympathy of some of the oldest supporters of sanitary reform in thus urging that half a loaf was better than no bread. But we felt that there were certain conditions which limited the possibility of action. It was certain that time would not be given by the House of Commons, considering the work actually before it, adequate to allow of the consolidation of the law during the session of 1872. And it was also clear, to our view, that the matter was in the hands of a Minister fully aware of its primary importance, able and willing to grasp the question with a masterly hand, and not unconscious of the ultimate fame that would attach to the successful combating of the two master evils of poverty and disease.

But the more confidence has been placed in the wisdom and the energy of the Government; the more readily the House of Commons passed the stump of the Bill; the more hopefully sanitary reformers, in and out of Parliament, looked for the beneficent development of the one active element of the measure, the power of inspection, set in motion by the Administration,—the more necessary is it to watch the commencement of this activity. There is one alternative clause, as we mentioned in our first paragraph, under the shelter of which we very strongly suspect that the greater part of the new district authorities are taking a convenient slumber. "Or," says the Act, "or—at such other time as may be directed by order of the Local Government Board." Is the care of the health of the country waiting for the construing of a legal sentence?

It is past question that if the various local authorities, urban and rural, to whom, under a new name, the exercise of already existing powers has been attributed, had felt any real desire to take care of the public health, they had abundant means of showing their disposition before the passing of the Bill. But it is notorious, and it is to a great extent natural, that the reduction, or at all events the non-increase, of local taxation, is the main motive that actuates many members of these Boards. To call a man a sanitary authority, instead of a burgess or a guardian, will not instil into his mind one grain more of that dread of pestilence which is the ultimate motive power as to sanitary measures. Dread of rates, which are a tangible evil, will, in the minds of nine-tenths of the new authorities, assume a much more positive form than dread of fever, of cholera, or of consumption.

This great, ugly fact did not escape the notice of the framers of the original Bill. A complete organisation was apparently contemplated by its provisions,—which is, indeed, possible under those of the present Act, but which is far less probable,—which, in fact, has become highly improbable,—except from centrifugal pressure. Thus, the Bill says, "It shall be the duty of every urban sanitary authority, from and after the expiration of three months from the commencement of this Act, to appoint a medical officer of health." As far as we can understand the language of Acts of Parliament, we apprehend that this meant that such officers were to be appointed at the end of three months from the passing of the Bill; that is, the Act being dated the 10th of August, every district of England was to have its proper medical officer by the 10th of November. But what says the Act? "It shall be the duty of every authority to appoint from time to time an officer." When does that render action imperative? We are fully aware that while the words of clauses are liable to be "amended" by every one of the 656 members of the House of Commons, no minister is altogether responsible for verbal changes of this nature, however important they may be. Still it is highly necessary to look the actual fact in the face.

A body of medical officers, spread over the country, must consist of men subject to the infirmities of humanity, and liable to be influenced by its lower motives. That they may be, and we believe as a rule are, far more readily influenced by the best and noblest motives, is our unfeigned belief, founded on a more than ordinarily extensive acquaintance,—that is to say, compulsory acquaintance,—with physicians and general practitioners in this country and in Ireland. But in all legislative measures we ought in wisdom to regard the motives of self-interest rather than those which are disinterested.

In this case, the wisdom of the arrangement depends upon the propriety with which the term "body" can be used. If measures are taken for establishing a common bond among these medical officers; if, by quarterly meetings, by being required regularly to report to a superior medical authority, or by any other form of mutually informing and supporting action, an *esprit de corps* be encouraged, we shall have established a very efficient medical police, and the Government will be able to lay its finger on the pulse of the country.

If, on the other hand, we have nothing but the appointment of a medical officer, quite isolated from his brothers, under the sole authority of the local board,—we do not say that there is one who will not do his duty, but we do say that, in nine cases out of ten, that duty will conflict with his interest.

On the plain words of the Act, then, the appointment of a medical officer is left much to the good pleasure of the ratepayers,—a rate regulation; and his post, when he is appointed, is one in which he has more encouragement to do nothing than to exert himself.

While one of the branches of the care of public health,—that is to say, medical inspection,—is thus so far from being placed on a thoroughly efficient footing, what are we to say as to the other, and not less important, part,—the physical aspect of the case? The aid of the doctor is, to a limited extent, invited, but nothing is said as to that of the engineer.

It is very certain that the medical officers of health have neither the time nor the mechanical education which should fit them to be removers as well as inspectors of nuisances. Throughout the whole of our urban districts the question of sewering is assuming every year fresh importance. The question is one within the province of the engineer. It is exactly one of those questions which most loudly demand thorough and effective superintendence by men specially educated and accustomed to the subject. It is so from its very simplicity, as well as from its wide range. If a man wants to make his will, he sends (if he has common sense) for a lawyer. If he has to grapple with an attack of disease, he sends for a doctor. But if he wants to put in a drain, or if his house becomes pervaded with noxious gas, he does not send for an engineer. He thinks any one can put in a drain-pipe,—at all events, the builder's men may be trusted to do so. The subject is uninviting in every way. Cost is deferred,—that is to say, money cost,—as long as possible; and then the cheapest rule-of-thumb man is set to work. It is such a trifle,—a rain-water pipe that has a close, unpleasant smell proceeding from it,—mere fancy, perhaps, or disagreeable, indeed, yesterday, but not perceptible to-day; when, moreover, *pater-familias* has a slight cold. A trifle, no doubt; and so is the death of a child a trifle,—to the Registrar-General. It is only one unit in that grim sum which he is perpetually adding up. But what is it to the parents? Even so the amateur drainer or non-drainer of his own house may be the sower,—as we have only very recently seen to be the case in India,—of the fertile seeds of a disease that shall devastate a province.

The engineering inspector is a man as neces-

sary to the health of the country as the medical inspector. The latter is the eye (and indeed the nose), the former is the hand. We are not arguing that it needs the presence of a Brunel to lay down every drain-pipe, or even to superintend the outfall of every town. But we do insist that each and every link in the great water circulation of the country should be closed only by hands amenable to educated superintendence; that there should be an officer responsible for the sanitary engineering of every district,—one to whom the builder and the negligent or ignorant creator of a nuisance should be responsible; or at least a man who should, as a matter of duty, set in motion the remedies provided by law.

As we rise from the very smallest details of the daily service of our domestic water supply and sewage to the consideration of the questions which are now pressing for solution in every urban district in England, the need, not only of local surveyors, but of some method of combining the local information, and of making any engineering district that is planned or carried out subservient to the thorough drainage and sanitary, as well as economical, distribution of the water supply of the whole kingdom, becomes more imperative. Powers are given by the new Act to enable one local district to drain, by mutual agreement, into the carriers of another. Such an arrangement, instead of being facilitated, ought to be rigidly forbidden by the law, except on proof that the drainage of the recipient, as well as of the contributing, district was not only adequate, but so laid down as to be consistent with the ultimate drainage of the whole country in the most efficient manner. No one can have any practical acquaintance with such works as, for example, the carrying of a railway through a town, without becoming aware of the extreme complexity, cost, and danger to health that are incurred by the ill-considered location of drains. That their cost is thrown away is the least evil. Every drain that is not built with a proper relation (intentional or not) to the general system of ultimate effectual drainage of the district in which it is situated, is a source of expense, of delay, and of danger. And as water will not wait, and commutated supplies work their own means of exit, the importance that a thoroughly scientific direction, in the first instance, should be given to every sanitary work, is paramount. In fact, efficient engineering inspection is a want in every way as urgent as efficient medical inspection.

What do we see throughout the country? Puzzle and alarm. Costly experiments, conducted everywhere on the most gigantic scale, because primary principles have not been laid down in the first instance. The costly sewerage of Liverpool, on which so much skill and money has been expended for nearly a quarter of a century, relies on the swift current of the Mersey for its outfall. It may be remembered that the Mersey has a bar. It must also be noted that the death-rate of Liverpool is still the highest in England, being equal to that of Manchester, and nearly a sixth higher than that of London; while the infant mortality of that borough presents the frightful proportion of 39 per cent. (not per thousand) in the first year after birth! Is the question of the disposal of the sewage of London settled? What says the Government inspector, Mr. Rawlinson, in his "Report upon Inquiry into the Truth or otherwise of certain Allegations contained in a Memorial from the Vicar and other Inhabitants of Barking, in the County of Essex, calling Attention to the Pollution of the River Thames by the Discharge of Sewage through the Northern Main Outfall Sewer of the Metropolitan Board of Works"? The memorialists "call attention to the present dangerous condition of the river Thames—dangerous alike to navigation and to the health of the inhabitants of Barking, and of all the populous and industrial towns below London, consequent upon the concentrated discharge of sewage through the main outfall sewers of the Metropolitan Board of Works." Mr. Rawlinson reports that "the allegations in the memorial have been only partially proven;" that "the Metropolitan Board have objected to the admission of sewage into the Thames from towns above London, and therefore inferentially justify the objections to river pollution below London;" that the river Thames is polluted by metropolitan sewage, and that that pollution may be prevented. There is a world of menace in Mr. Rawlinson's very temperate and judicial report, sentences of which only we extract.

What is the spectacle presented by Birmingham, played like a shuttle-cock between the Court of Chancery and the House of Commons? What shall we say to the experiments at Bishop's Stortford, where acres of country are subjected to the play of permanent fountains of sewage water, roughly filtered through faggots, and conducted through a system of pipes which, not to mention any other objection, involves a cost of thirty shillings per acre per annum for interest alone!

Again, in criticising the Bishop's Stortford process, a writer, evidently not new to the subject, urges that it is from its mineral contents that sewage derives almost its sole agricultural value. In the estimated theoretical value of 2s. per ton, ascribed to ordinary town sewage, undiluted by storm water, half is set down to the value of the organic matter, which one of the most practical investigators of the subject proposes to burn—a step that, at all events, will make sure that it shall not propagate. This organic matter constitutes 4·6 per cent. of the undiluted sewage poison. Of the remaining matters, chemical analysis gives 1·8 per cent. of gaseous to only ·7 per cent. of mineral elements. The latter includes soda, potash, lime, manganese, silicon, phosphorus, sulphur, oxide of iron, and chloride of sodium. The mineral ingredients of the sewage, therefore, other than those which exist in the form of soluble salts, must be almost entirely due to the road-scrapings and other detritus brought down by the storm waters. The excessive cost and cumbersomeness of conveying matter of this kind to the fields, by mixing it with sewage, need hardly be pointed out. In fact, it is difficult to find any of the thousand schemes proposed for extracting gold from our drainage, that will stand before the pitiless logic of arithmetic. The great demand of agriculture is for concentrated, portable manure. The mode generally adopted in conveying sewage to the land, commences with diluting it to an unmanageable degree, and often proceeds on the supposition that, by adding other matters, we are adding to the value more than we do to the cost, the very reverse being generally the case. Here again the whole country is looking for guidance as to the best course to adopt.

The town clerk of Canterbury, referred to in our recent number, may no doubt be taken as a fair representative of the legal advisers of the new sanitary authorities. He was in doubt as to the necessity of calling a meeting, on which point he took the safe side. "*He did not anticipate that there would be anything to do.*" He waited for the regulations of the Local Government Board. We re-read the Act with care, to discover the cause of this hesitation. We could find nothing to justify it. But here is a fresh and a most significant proof of how patiently the country is awaiting the initiative of the Administration.

Again, the omission from the Act of the prohibitory and penal clauses contained in the Bill is a matter that throws a great onus on the Local Government Board. By this insertion in the Bill it is plain that it was the deliberate opinion of the Government that they were necessary. Their withdrawal from the Act was in consequence of want of time for full discussion of the measure. But the fact renders it all the more intelligible how the country is looking to the Government for a vigorous and comprehensive initiative. Had the original Bill passed, and proved ineffective, ministers would have been fully justified in waiting till they could refer the matter afresh to Parliament. But not so as it is. The real gist of the matter is this. The Government said, in effect, "We have no time this session to do more than enable local action to commence. We have a definite plan of our own. We require some time to complete our organisation. But we take power, vague but comprehensive, to enable us to organise. With the inspectors to whom you give powers by clause 15, we shall quietly, rapidly, and thoroughly block out the normal plan for the entire country. See what our organisation is, and we will come to you again, when you have more leisure, to consolidate the law."

Such, unless we are much mistaken, was the understanding with which the House of Commons passed, without hesitation, the measure of last session. Such, we think there can be no doubt, is the expectation of the country. Parliament has intrusted to the Minister of Public Health a power all the more complete from the vague terms in which it is accorded. The public expect to see this power in visible, effective, beneficent action. Every day adds complexity, delay, cost, loss of life, to the difficulties of the case. Every sanitary reformer is looking anxiously for the sight of an action that shall begin at the beginning, by organising the medical and the engineering system to which the whole country has to conform. Isolated action, in this case, is worse than idle; for it may clash with systematic action. Every opponent of sanitary movements will rub his hands, and do nothing. Right or wrong, the country is looking to the Government for the signal. That extreme constitutional delicacy which has so often hampered efficient action, is out of place in view of a great danger and a great difficulty. We trust that the Government will feel that the general consent of the country will strengthen their hands in a prompt, efficient, and well-advised treatment of a problem which is medical in its indications, but engineering in its practical treatment. Happily, this vital question has not hitherto been seized upon as a party question. England is in earnest about it. The proof of science has been said to be the power of prediction. This has, indeed, been mainly confined to astronomy. Our readers will have seen, in the marked rise in the price of coal, a proof that engineering science is not altogether to be excluded from the category of predictive knowledge. It remains dependent on the fact whether the machinery for improving the public health be based, from the beginning, on sound engineering science or not, whether the Act of 1872 shall prove a wise step in the path of civilisation, or a deplorable failure.

NEWS FROM EDINBURGH.

The clearance of the congeries of densely-packed houses to the north-east of the High-street in order to form the new thoroughfare, to be called Jeffrey-street, is nearly completed, and from amidst the mass of *débris* appears the substitute for the ancient Trinity College Church, like "the new moon with the old one in its arms." So far as at present appears, the amalgamation of part of the ancient structure with the new work is not particularly happy.

In connexion with the city improvements, the lofty gable which surmounted the piazza at the north end of Blackfriars-street has had to be pulled down, owing to defective construction; and a movement is on foot to have the piazza done away with altogether.

The centre portion of the Museum of Science and Art is now finished so far as regards the stonework. To complete the façade, the west wing is still awanting. The portion just erected embraces the central entrance, consisting of three lofty arches. Keystones have been used in these arches, and the spandrels are panelled, which imparts to this part of the building a different character from the remainder, where such features are not used. If we mistake not, the original design has been departed from, and it would have been better had it been adhered to.

The restoration of the choir of St. Giles's is being rapidly pushed on under the superintendence of Mr. William Hay, and it is expected that operations will be completed in the course of next month. The stonework seems to have been of an inferior description, necessitating a more liberal use of cement than is desirable. Now that an idea can be formed of the interior as an architectural work, it strikes us as greatly inferior to many others of the ancient churches in Scotland. The arcade, with its octagonal shafts, is heavy, and the clearstory very bald; but in a city having so few ecclesiastical remains, it is deserving of careful preservation.

The competition for the new Apostolic Church to be erected in East London-street, which we referred to in a former notice, has been decided in favour of Mr. Robert Anderson, of Edinburgh. The design, according to the instructions, is Norman in style, and consists of a spacious nave in the form of a double cube, with an unusually deep chancel, terminated by an apse. The chancel is flanked by aisles, in one of which is to be placed the choir organ; and the other, which terminates in an apse, is to be used as a chapel. The grand organ is to be placed in a gallery in the tower, which occupies the centre of the west elevation; under this is the main entrance, from which diverge passages leading to the baptistery on the right, and a hall to the left. The window lights of the nave are placed well up from the floor, and slender attached shafts run up between them to support the beams of an open-timber roof of very simple character. Severity and dignity of effect have

been aimed at, and, if carried out in its entirety, the building will form a marked feature in the city.

Messrs. Macgibbon & Ross are the successful competitors for the new Free Church at Morningside, which is to be erected at a cost of about 3,000*l*.

A hall in connexion with a new United Presbyterian church in London-road, from the designs of Mr. Starforth, has just been completed. The site of the church is occupied by a temporary one, and the congregation will use the hall as their place of worship till the permanent church is completed.

In Grove-street a new mission-house, with small chapel in the rear, in connexion with the Barclay Church, has been erected from the designs of Messrs. George Beattie & Son. It is a heavy example of the chamfer and splay Gothic sort.

On the sloping bank to the south of the Castle new quarters for married soldiers are to be erected, at a cost of 8,000*l*. The building is to be three stories in height and 280 ft. in length, similar to what is usually produced as artizans' dwellings. Each couple will be provided with a room 16 ft. by 14 ft., and other conveniences are supplied for the general use of the inmates.

On the east side of St. Giles-street, new premises are being erected for the *Edinburgh Courant* newspaper, from the designs of Mr. David Bryce. The design is a highly ornamental one, in the Scottish domestic style of street architecture. The windows of the first floor are richly decorated in a quaint manner, and the sky-line is broken by gables and moulded chimney-shafts.

In the rear of the Merchant Company's School, in Archibald-place, a hall for lectures, exhibitions, and examinations is to be erected in harmony with the classical design of the school.

The erection of the new Royal Infirmary is proceeding in a very languid manner. The basements of all the pavilions, twelve in number, have been contracted for and are nearly completed, but it is said that the funds in hand are insufficient to meet the cost of the superstructure of all of them. If such is really the case, the wiser course to have followed would have been to complete only such a number of the pavilions as the funds allowed. The present state of the matter does not appear satisfactory in any sense; for, from the disposal of the building, we do not anticipate that the architectural effect will be happy.

The very picturesque statue of Dr. Livingstone, the African traveller, by Mr. D. O. Hill, of which we gave a description at the time it was exhibited in the rooms of the Royal Scottish Academy, is now exciting some attention. Propositions are broached for producing it in bronze both for this country and America. It would form a marked contrast to the generality of public statues now produced, the costume and general treatment being very unlike the usual conventional style of such.

The sketches by the selected sculptors for the statues to be placed in the Scott Monument have been examined, and half-sized models have been ordered for the approval of the committee. In addition to the statues already ordered, Mr. Currie, of Darnich, is commissioned to prepare a statue of "Old Mortality."

No decision has yet been declared regarding the cathedral designs. We have received statements of odd gossip on the spot, but it is unnecessary to print them.

NEW SCHOOL OF ARTS, EDINBURGH.

The new School of Arts, the foundation-stone of which is to be laid with full Masonic honours on the 9th of October, stands in the centre of Chambers-street, now being opened up by the Improvements Trustees, and is immediately opposite the centre of the Industrial Museum. It will thus form a prominent feature of the north side of the street, and the site seems in every respect peculiarly suitable for what has long been looked upon as the firmly-established technical college for the working classes in Edinburgh. Its close proximity to the various collections connected with art-manufacture forming the Industrial Museum, may reasonably be expected to be of much advantage, both to teachers and students, in illustration of the lectures and classes of the Institution; and, if for no other reason, this, we think, makes the site selected a very fortunate one for the purpose.

The School of Arts has been in full prosperity and success for upwards of half a century, and its reputation is at this moment higher than it ever was before. Indeed, it has gradually developed itself into a great and valuable national institution, with every reason to anticipate that when this new building is opened it will enter upon a still higher and more extended sphere of usefulness and prosperity than it has hitherto enjoyed, great as that has been.

The building being at the west side of the extended open space in front of the centre compartment of the Industrial Museum, has the advantage of a front both to the south and the east. The south, or Chambers-street front, is rusticated on the ground-floor, having balusters under the first-floor windows. The first-floor windows have architraves, trusses, and cornices, except in the west pavilion, where the building goes up an additional story, ornamented with pilasters at each side and decorated windows.

Over the first floor is the main cornice, having dormer windows over, which are intended as a feature in lighting a richly-decorated cove in the larger lecture-hall.

There is a projecting porch at the main entrance under the pavilion at the west end, a novel and effective feature of which is the statue of James Watt, removed from Adam-square, which will sufficiently mark the building as the Watt Institution, while at the same time it will be a thoroughly appropriate feature of the School of Arts.

The great entrance at the west end is by a hall and staircase leading to the various lecture-halls and class-rooms. The whole is spacious, and well suited for what is now required; and, indeed, ample for what may be anticipated as the wants of the Institution for many years.

There is a lecture-hall, 58 ft. by 33 ft.; and a smaller one, 34 ft. by 33 ft.; with a chemical class-room, 33 ft. by 23 ft.; and also a chemical laboratory and apparatus-room for mechanical philosophy. The other class-rooms are also of ample size for their respective purposes; and there are a library, directors' room, master's private room, with all the minor accommodation for lavatories, &c., and a keeper's house.

The architect is Mr. David Rhind, Edinburgh; and the contractors are Messrs. David Sutherland & Son, Edinburgh.

POLLUTION OF THE RIVERS OF SCOTLAND.

Dr. Frankland and Mr. Morton, who, since the death of Sir William Denison, form the commission appointed to inquire into the best means of preventing the pollution of rivers, have given their report on the rivers of Scotland, dated June 29th, 1872.

The Tay, the Dee, the Don, and some other rivers, are purer than the standard recommended by themselves as a test of non-pollution; but the Tweed, the Clyde, the Irvine, the Esk, the Water of Leith, and the Almond, with their tributaries, are very much fouled. The watershed which divides the basin of the Tweed from that of the Clyde runs nearly north and south, and throws the Tweed waters into the North Sea, and the Clyde waters into the Atlantic.

The Tweed basin is in shape a somewhat rounded oblong area, containing 1,870 square miles. "From its edge, on all sides, inwards, there is a wide margin of grassy hills, many of them upwards of 2,000 ft. high, occupying a large proportion of its surface. Unbroken slopes of green, for the most part above human habitation, constitute the very ideal gathering-ground for the water-supply of towns; and the pastoral regions of the Cheviots on the south, the hills surrounding Biggar on the west, and the Lammermuirs upon the north, send the abundant rainfall of those upland districts, almost as pure as they receive it, into the Tweed and its tributaries. Below the margin of these grassy uplands there are, indeed, extensive cultivated tracts; but these are occupied by a comparatively scanty agricultural population, and the rainfall on them is but little fouled on its way to the drainage-channels of the district." These two areas, together, form about two-thirds of the whole area, and the water flowing from it is represented as free from pollution; but the lower third portion, occupied by the manufacturing towns, is very bad. The Commissioners say that, notwithstanding the obviousness of the change in the waters of the Tweed ensuing immediately on their passage through or near the manufacturing towns, some attempt was made by the manufacturers to attribute the altered condition of the Tweed during the past twenty or thirty years somewhat to the altered agricultural practice of the country during that period. It was declared that the drainage from heavily-manured or recently-limed land is deleterious; and it was also said that the great extension of land drainage of late years has had the effect of shortening floods, and thus intensifying the mischievous effect of a consequently longer time of drought. "The latter allegation is, no doubt, true. The water which was formerly held in marshy grounds, from which it trickled gradually and continuously, until once more replenished by the rainfall, now flows directly to the river. Such reservoirs have in fact, been drained, and the condition of the river, therefore, answers more immediately than it used to do to the character of the weather. A flood in the river channel now begins and ceases almost as abruptly as it begins and leaves off from the clouds. It is, indeed observed, that land which has been deeply drained withstands a drought better than a wet soil; but that is not so much because a deeper and larger sponge, as it were, has been thus provided in which water can be stored for the use of plants, and from which it may be expected very gradually to find its way to the stream, as because land-drainage so facilitates the operation of husbandry that an earlier seed-time becomes possible, and thus the cultivated plants have time to acquire deep-seated roots, which are well established before the summer drought arrives."

Woollen manufacture is the staple industry of the district, and at Galashiels there are sixteen mills, in which nearly 3,000 persons are employed, and upwards of 3,000,000 lb. of wool manufactured in a year, worth about 600,000*l*., with a consumption of coal of 16,350 tons in the year 1870. At only one of these mills is any attempt made to remedy the nuisance occasioned by the liquid refuse of the woollen manufacture. But with all this and much more refuse from other mills in other parts of the district, the Commissioners say, "There is not, except for a mile or two below Galashiels, any instance in the whole of the Tweed basin of such an entire destruction of river beauty and utility as we have witnessed in the basins of the Mersey and the Ribble, in Lancashire, or in those of the Aire and Calder, in Yorkshire." On the whole, the Tweed is not yet seriously injured, and the Commissioners say that it is most desirable that remedies be at once applied, by which, without serious injury to the important interests of the manufacturers on its banks, the charm and usefulness of a beautiful river may be retained unspoiled, or restored to their original perfection.

The remedy recommended by the Commissioners for the purification of the waste liquids from woollen works is, first, to separate the foul wool-scouring and dye-vat liquors from the comparatively harmless washing-water. By the adoption of this simple precaution, the volume of polluting water requiring remedial treatment would be reduced to a minute fraction of the total discharge from the works; and its purification would be to a corresponding degree simplified, since the washing-water, which constitutes the great bulk of the total discharges, can easily be kept within the standard. This separation being made, the rest is to be purified by intermittent filtration, at the rate of about six gallons in twenty-four hours per cubic yard of filtering material, the liquid being first treated with lime, so as to precipitate most of the solid matter. The Commissioners have experimented on this process for twelve months, from the beginning of 1871 to the beginning of 1872, and they find that in all cases when 5·6 gallons of the liquid per day are apportioned to each cubic yard of filtering material, the result is to reduce the impurities much below the standard. "There are, doubtless, woollen manufactories situated in towns in which intermittent filtration would be inconvenient, perhaps impossible; but it is precisely in such localities that this process would not be required. The strongly polluting liquors kept separate from the comparatively clean washing-water would form a suitable and moderate contribution to the sewage of the town, to be cleansed along with that sewage at the outfall, by irrigation or intermittent filtration; whilst the washing-water would be at once restored to the river in a condition fit to be used by other manufacturers and riparian proprietors lower down the stream."

The Clyde has its origin near that of the

Tweed, but on the opposite side of the watershed. It is one of the most beautiful rivers in Scotland for about two-thirds of its length downwards, but below that its character is wholly changed. At about three-fourths of its length is situated the large manufacturing city of Glasgow. About eleven miles above Glasgow the Clyde receives the smaller river North Calder, into which drain paraffine-oil works, iron works, coal workings, paper-mills, and print works, a succession extending almost from its very source, besides the sewage of the large population in and around Airdrie and Coatbridge. At three of these paraffine-oil works 18,000 tons of bituminous shale are annually distilled, the quantity of coal consumed amounts to 30,000 tons a year, and the volume of crude paraffine and paraffine-oil produced exceeds one millon gallons annually. At the Caldercruix paper-mill, near Airdrie, 1,200 tons of rags are used annually in making 800 tons of fine packing-paper. It is, however, to Glasgow itself that the principal pollution of the Clyde is due. "Owing to the enormous water-supply, Glasgow is more perfectly washed out than any other city in the island; so that, notwithstanding the very laborious and productive operations of the scavenger, a large proportion of the personal waste of its population—one half, according to the estimate of Mr. John Carrick, Master of Works and City Architect,—together with all its industrial waste, is sent directly and completely into the river." The water supply of Glasgow is alone more than half the estimated minimum flow of the Clyde as it passes through the city, being twenty-seven million gallons daily. In order to allow larger ships to come up to Glasgow, the river has been deepened from time to time, all the way down to Greenock, and the effect has been, of course, to lessen the velocity of the downward course of the stream, so that when the sewage of Glasgow is poured into the river it is almost like pouring it into a cesspool. By experiments with floats, made in 1857 and 1858 by Mr. Bateman and Mr. Bazalgette, it was shown that sewage which entered the river at the centre of the city when the natural volume of the river was small, did not travel more than 2½ miles in a week. "In summer weather the time during which the river is thus made to loiter on its way to the sea is more than sufficient to establish in full operation those processes of putrefactive fermentation—inevitable whenever the thermometer exceeds 13° C. (55° Fahr.)—to which the formation of sewer gas and other filthy products of this fermentation is due."

On the south-west of the Clyde basin lies that of the Irvine, and about seven miles inland stands the town of Kilmarnock, in which nearly 23,000 people are engaged, chiefly in various woollen manufactures. Kilmarnock water, which joins the Irvine just below the town, "is a striking example of most of the evils connected with neglected river economy to which our attention has been directed in the course of this inquiry." The effect of the more perfect land drainage of the river basin has been perceptible here, as elsewhere, in the greater abruptness of floods, and the longer duration of droughts; but, "formerly, these consequences were alleviated by the operations of Loch Goin, a reservoir of about 140 acres, holding 300 million gallons of water, in which flood-waters were, to some extent, impounded, being allowed to escape during dry weather." This reservoir is situated at the head of the river basin, and belongs to one proprietor, who leased the use of it to the millowners below; but as soon as the lease expired, its renewal was refused, and the water was drained off, "the owner declining any longer to incur the risk to which his attention had been directed by the then recent disasters produced by the bursting of the Holmfirth and Dale Dyke reservoirs in Yorkshire. The evil of an unequal river flow, to which this reservoir had opposed a very efficient remedy, is thus felt at Kilmarnock with all the force of the contrast between the present and the recent past."

According to a section of the bank of this reservoir given in the Report, its proportions are excellent in point of stability, the slopes being for about half the height 4 to 1, and above that 3 to 1 inside, and 2 to 1 outside, the height being 18 ft. and the top of the bank 4 ft. above the top-water level. It is difficult to understand the reluctance of the proprietor to continue the use of a reservoir with such a bank as this. Nearly all the banks of such reservoirs in England have slopes of not more than 3 to 1 inside and 2 to 1 outside, for their full height, that height being in most cases much more than 18 ft.

Messrs. Gregory, Thomsons, & Co., worsted spinners and carpet manufacturers, of Kilmarnock, who employ 200 hands, suggest to the Commissioners, "that the reservoir at Loch Goin should be maintained, and the flood water there impounded, so that, as formerly, an equable flow might be allowed to pass daily down the stream, and the water in the river be in a comparatively pure state." They further suggest "that manufacturers, town authorities, and others, be strictly prohibited from casting solid and liquid refuse into rivers and streams; that proper regulations be enforced for conserving rivers, and that inspectors be appointed by Government for enforcing those regulations, such inspectors to be entirely free from all local influence." Rather strong language this for a local manufacturer; very sensible, and probably is shared in by many more manufacturers than we know of or hear anything about; but to suggest it to a Royal Commission with the hope of any practical result is about as effectual a proceeding as that suggested by the Rev. Sydney Smith—to tickle the dome of St. Paul's to please the dean and chapter.

SILICA PAINTING AND SILICA CASTS.

In the Seventh Cantor Lecture on Silicates, Professor Barff said:—On the evening of my first lecture I received a letter, without a name to it, in which I was asked to explain how it was that the famous painting by Maclise, "The Meeting of Wellington and Blucher," in the House of Lords, was coated all over with an apparent mildew. I did not notice the letter then, because that was not the time for me to speak upon the subject, but I have borne it in mind, and now I will tell you how it has happened. This particular difficulty has been experienced by most who have tried silicious painting. Silicate of potash usually contains an excess of alkali. It is acted upon by the air, and then carbonate is formed, and as this goes on, a certain quantity of silicic acid is set free. You remember I showed you an experiment in which carbonic acid precipitated silicic acid; so that in the case of a quantity being contained in a vessel, there will be more silicic acid in the lower portion of the silicate and less in the upper portion. Now, Mr. Herbert, who was intimate with Mr. Maclise, has told me that Mr. Maclise was continually painting with the top of his silicate and not the bottom, and the consequence was he was using an insufficient quantity of silica in the silicate. There was also no doubt some sulphate in the silicate. When the picture was finished, the sulphate and carbonate came out. I fancy you all know that if you take a lump of common washing soda, and leave it for a time, it becomes covered with white powder; this is called an efflorescence. If you destroy it with moisture, you will find it will soon show itself again as the soda dries. The soda will keep on efflorescing. That is what is going on in the picture by Mr. Maclise. In the other picture,—that of "The Battle of Trafalgar,"—you do not find this to be the case; there is only a little efflorescence in one or two parts. Now that picture was differently painted. It was painted with much better silicate, and with much greater care. My authority for this statement is Mr. Herbert, and he and Mr. Maclise were perpetually together while the work was going on. In the "Battle of Trafalgar" a large quantity of zinc white was used, and that prevents efflorescence. One reason why I introduced aluminate of potash along with the silicate of potash was to prevent this efflorescence, and it does so effectually. If you will coat a wall with this material you will never get efflorescence on that wall.

There are methods, no doubt, by which this efflorescence may be got rid of in existing pictures. At present my idea is that the proper thing would be to wash them over with some salts, which would convert the effloresecent salts into deliquescent ones. I hope to be allowed to try an experiment on a small part of one of the pictures some day. My idea is that some acetate, say acetate of baryta, would do; for when applied to the picture, sulphate and carbonate of baryta, which are insoluble, would be formed, and deliquescent acetate of potash. I believe some such method as that might be employed, so that we might have that beautiful picture without its present disfigurement.

I will suggest a method in which silicious painting may be used in conjunction with oil or varnish painting. It is the custom to admire an old painting, and especially the works of certain old masters, though oftentimes very little of their own work is seen. For my part, I care not whether a picture is painted by an old master or not, if it does but truly represent nature, and if the principles on which it is treated will bear the test of scientific investigation; for what is not true cannot be beautiful, and the artist's imagination and creative powers have limits set to them by nature. Some time ago I was asked by Mr. Leighton to examine a piece of a picture by Tintoretto. I did so, and analysed parts of it very carefully. I removed, little by little, all the varnish, and whatever came between me and the canvas, and I found that the whole of the picture was painted up to a high degree of perfection in distemper. It was not painted in oil at all at first. Not only was it painted in whites and greys, but painted in and shaded up to a considerable amount of finish, and all this was done in distemper. The vehicles used were size and starch, and no oil whatever; and then afterwards the painting was painted with oil or varnish, I cannot tell which at this distance of time. The glazings were put on with some resinous substance. Certainly this method of painting has wonderful advantages. When an artist puts a touch on a canvas with such materials he knows exactly what he is doing, and never depends upon chance effects. There is no running together, there is no "cessing," as in oil, in the use of this material, with which it is quite clear the old masters did produce some wonderful effects, as we see when we come to clean their works, for this Tintoretto was almost invisible before the covering of varnish was taken off, but when it was, the extreme beauty of his work was manifest.

Now, the silicious method of painting may be used up to a certain point. Supposing an artist wants to glaze with lake, he cannot do it with silicious painting, because the potash will not allow of it. But there is not the slightest reason why he should not use the lake as a glaze, providing he does it with the knowledge that in years to come the lake, being fugitive, may disappear. There is nothing to prevent the use of silicate, and then of resinous vehicles upon that silicate. You can have the first painting done in silicate, which will be more enduring than distemper, and then afterwards you can glaze it with transparent colours used with resinous vehicles.

I have two other masters to speak to you about, and will, therefore, pass on to them, for they are of importance in the applications of silica. I have here lying on the table some blocks of excessively hard material. You can examine them for yourselves after the lecture, and you will find that they are as hard as granite. Here is some of the same material pressed into moulds, showing that it is capable of being moulded. Now, this is used for paving; and a piece of pavement of this material has been laid down opposite the Mansion House, and I have been informed by the patentee, the Rev. Mr. Highton, that the pavement is standing and wearing better than the Yorkshire flags. I feel interested in all applications of silicates. For the last twenty years I have been working upon them; and upon this very subject also have I been working, though not with the success with which Mr. Highton has done, for he has hit upon a plan of doing the thing in an economical way, whereas my method was rather too expensive to be generally used. You here see a lump of material which is called Farnham sand, and some of this lump is here crushed to a fine powder. This Farnham sand contains 50 or 60 per cent. of what is called soluble silica. Ordinary sand must be melted with soda or potash in order to convert it into glass prior to making it soluble. This Farnham sand requires nothing of the kind. If you put this into silicate of potash the soluble silica will be dissolved, even in the cold, by any excess of potash which may exist in the solution of silicate of potash. These blocks are made in the ordinary way. They are made of granite chippings, mixed with Portland cement, and cast into this form. The blocks are piled up, one upon another in a tank, and the whole is filled in with silicate of soda, and the silica from the silicate of soda goes into these blocks and forms silicate of lime with some of the lime which is in the Portland cement. The carbonic acid that is taken up by the silicate of soda also leaves the soda and goes to the lime, so that the caustic soda is able to dissolve the soluble silica of the Farnham sand, which is added in quantities. You remember an experiment I showed you, to the effect that lime can take carbonic acid from carbonate of soda. From the hardness of this

block you will see there is penetration throughout nearly the whole of it. Now an invention of this kind is useful in various ways. There are certain wall decorations which it is perfectly admissible to repeat, and which may be cast in moulds. I should not advocate its being used in the place of carving, but it might fairly be used for certain purposes outside of buildings where cement is now used, and it would not be acted upon by damp. The use of silicate of soda and silicate of potash, together with other materials, as a protection for stone, has been before the public for a long time; but the difficulty that one has had to contend with has been this, namely, we cannot get it to penetrate the stone to any depth, and when we do get it to do so it will not hold the disintegrated particles together and bind them into a solid mass. I tried an experiment upon some old stones which were crumbling away, and I found that the decayed portions must be removed before the application of the silicate. There is a great deal yet to be done before soluble silicates can be used with much success in coating stone. At present we only get them in just skin deep; but if soluble silicates are to be used they should be used with some such substance as the aluminate of potash, which causes a rapid hardening, and prevents efflorescence.

SCHOOL BOARDS.

Norwich.—The General Purposes Committee recommended the Board to adopt the tender of Messrs. Downing & Webb, for 4,163*l.* 17*s.*, for the erection of the Board schools, on the Heigham-street site. The Rev. Hinds Howell moved the reference of the tender to the Tender Committee for reconsideration. He said that when in the first case the specifications were placed before the Board a considerably smaller sum was named as the amount that would be required to build a school for 500 children. After some procedure, Mr. Brown (the architect) said that the former estimate was for 2,650*l.* The rise in building materials and labour, he said, would account for a good portion of the excess. The Rev. A. C. Copeman said that the Board had been anxious to get to work upon the schools. They had been impatient of delays. When the estimate was first brought forward it was distinctly stated by Mr. Brown that it was only a rough one, as the trade was in such a state as to render it almost impossible for any man truly to determine what would be the cost. Mr. Brown's explanations had brought up the estimate to within 738*l.* of the lowest tender. The tenders were 4,630*l.*, 4,316*l.*, 4,315*l.*, 4,286*l.*, 4,227*l.*, and 4,163*l.* What object could possibly be served by a reference to the sub-committee? Were those who tendered to be called to account, or was the architect to be taken to task? Every work the architect had specified had been carefully examined, and everything was considered to be absolutely essential. That being so, what purpose could the reference serve except delaying the works? It was possible that the works might be less expensive by delay, but it was upon that contingency alone. Mr. Pinder calculated that the estimate would give 390*l.* above the 6*l.* per child; and suggested that reductions should be made to that amount. Mr. Birkbeck said that it ought to go forth, in justice to Mr. Brown, that the rise in prices largely accounted for the difference in the estimates. If the reference were to be made with a view to save expense to the city, he should support the motion. The resolution was then agreed to.

Newcastle.—At an adjourned meeting of the Board, it has been resolved, on the recommendation of the Science Classes Committee, to give 15 guineas to those classes, instead of 5 guineas, as last year. Mr. Carse moved that the plans of the three new schools, which had been before a committee of the board, be received. The motion was carried unanimously. Mr. Carse moved that the plans be adopted, and sent without delay to the Education Department for its approval, stating that 17,973 children were to be schooled, and there was only accommodation for 15,044, leaving 2,929 unprovided for. After a long discussion, the motion was carried, with the addition that a requisition be asked for.

Dronfield.—At a meeting of this board, the following resolutions were passed:—

"That the architects to the board be instructed to prepare plans and estimates for the erection of a school and master's house at Dronfield Woodhouse, including all fittings and furniture for the school." "That Messrs. H. May & S. Lucas be requested to examine plans, &c., for school-buildings at Dronfield Woodhouse."

Portsmouth.—At the last meeting of this Board, held on the 26th ult., it was resolved to adopt the following recommendation of the Sites Committee, viz.:—

"1. That Messrs. Alexander & Henman, of Stockton-on-Tees, conjointly with Messrs. Henman & Harrison, of Bedford-row, London, be appointed to furnish the design and superintend the work for the proposed school in Fratton-street, provided that their plans, having been approved by the board, are likewise satisfactory to the vendor of the site and the Education Department.

2. That Messrs. Mileham & Kennedy, of 40, Great Marlborough-street, conjointly with Messrs. Davis & Emanuel, of Finsbury Circus, London, be appointed to furnish the design and superintend the work for the proposed school in Kent-street, Portsea, provided that their plans, having been approved by this Board, are satisfactory to the Education Department, and that such appointments be made subject to such conditions and details as may hereafter be resolved by this committee."

Newport.—Mr. Benjamin Lawrence, of the firm of Lawrence & Goodman, has been appointed architect to the Board, and a new mixed school for 210 children will be commenced forthwith. The plans prepared by him, and selected by them, have been approved by the Education Board, and the buildings will comprise a school-room, 50 ft. by 24 ft.; a class-room, 24 ft. by 17 ft.; with lobby, 24 ft. by 7 ft. between these; at the end of which will be a lavatory, and entrance by an inclined way to the playground in the rear. Beneath the schoolroom will be a covered playground, and there will be a separate entrance by an inclined way from the street to the playground. The building will be Domestic Gothic, in brick-work, with Bath stone dressings, and covered with slate.

Proposed Congress of School Boards.—At the London School Board meeting a letter has been read from the Liverpool Board suggesting that the London School Board should take the initiative in calling a congress of delegates from all the school boards throughout the kingdom. This letter was referred to a committee.

HORNSEY NATIONAL BOYS' SCHOOLS.

The parish of Hornsey has long suffered in consequence of inadequate school accommodation, and it was not until the Government grant had been withdrawn that an effort was made to secure a more eligible site and raise funds to build a large schoolhouse. About six months ago an application was made to the Bishop of London for permission to erect the schools on the glebe lands, and the request was readily complied with, his lordship being well acquainted with the requirements of the parish, having been four years minister of Muswell-hill Church, twenty-six years ago. At that time the Hornsey National Schools, small though they be, were the only public schools in the parish, and to them all the children in the parish had of necessity to attend. Since that time the parish has more than doubled its population; and if building operations be carried on with as great vigour during the ensuing six years as in the past, the population will have quadrupled. The new buildings are situated at the western boundary of the glebe lands, which surround the parish church, and are close on the main road. The structure does not possess any striking features in architecture, and is planned more with the view to utility than architectural beauty. The building, which is of stock brick, is interlaced with ornamental purple brick. The walls are 16 in. thick, with a hollow of 2 in. through the entire length of the building, and are bound with iron ties. The roof will be high-pitched, covered with red tiles, having an ornamental ridge or cresting. There is a porch at the north-west gable, over which is the turret with the bell. There are two large school-rooms, about 59 ft. long, and a class-room, leading off the principal school-room. The building will be ventilated with Ching's patent talc-flap turret ventilators fixed in the ceilings. The walls inside will be lined with white brick. To the east is the house intended for the schoolmaster, which consists of a parlour, kitchen, and offices on the ground floor, and three bedrooms above. There will also be a yard to the master's house, independent of the schools. To the south-west of the building is the lavatory. The schools will accommodate about 300 boys, and the cost of the building is 1,900*l.* The old site has been sold for 1,000*l.*; 317*l.* have been received from the School Commissioners, 37*l.* from the National Society, and 800*l.* have been subscribed by the parishioners; the schools will therefore start free of debt, and the plans having been approved by the Government inspector of schools, the teacher will at once be entitled to the grant. It may be observed that the playground to the rear of the school will extend back several hundred feet, and form the boundary of the glebe lands. The architect is Mr. H. Martineau; and the contractors are Messrs. Manley & Rogers, Regent's Park.

THE NEW GOODS DEPOTS OF THE MIDLAND RAILWAY COMPANY IN LONDON.

Amongst other new works and buildings now in progress for the Midland Railway Company, along the line of country through which their railway passes, the company are about to erect and open new premises in different parts of the metropolis. We understand that the company have secured the site upon which Whitecross-street prison until recently stood, and that they are about to erect upon it an extensive goods depôt, and receiving-house for the district around the east end of the City. We are informed that the buildings in question will cover an unusually large area, and be of great magnitude. They are further about to construct a coal and goods depôt, of enormous dimensions, at Wandsworth, on land which they have purchased from the London, Chatham, and Dover Company, to the extent of 10 acres. They have also secured a portion of the buildings now in course of erection at the junction of Fleet-street and St. Bride-street, for Messrs. Cook & Son's tourist offices. The portion of these premises taken by the company, includes the basement and the two shops forming the ground-floor in St. Bride-street, which will be fitted up as goods and parcel receiving offices for this district. The large new premises just erected by the company, in High-street, in the borough, for a similar purpose, at a cost of 15,000*l.*, have just been opened. This depôt covers an area nearly 2 acres in extent, the building itself, which has its main frontage to High-street, and which is three stories in height, being a prominent architectural feature in the neighbourhood, and containing the offices and store-rooms, with two large and handsome shops which the company intend to let. The depôt, where the goods are received and forwarded to the main goods station at St. Pancras, is at the rear of the building, and is approached through a spacious gateway at the west end. The principal portion of the area of the depôt, which is nearly an acre in extent, is covered over with a glass roof, supported by iron columns and girders, and on the east side is a large platform raised about 4 ft. above the ground level, on which the goods are deposited, the rest of the space being set apart for marshalling the company's wagons and trucks. Immediately, in the extreme rear beyond the goods depôt, large and commodious stables have been erected for the company's horses. These stables, which have stalls for 50 horses, are constructed on two heights, one above the other, the upper stables being approached by an inclined plane.

VALUE OF BUILDING LAND IN WALWORTH.

The twentieth letting by auction, for building purposes, of land on the Walworth Common Estate, took place on Monday last, at the Elephant and Castle Tavern, when there was a very large attendance of builders and others interested. Messrs. C. Stuart Barker & Son officiated as auctioneers, and Mr. Barker, in opening the proceedings, made some interesting preliminary remarks as to the value of the land on the estate, and the houses which had already been erected upon it. He stated that about 1,000 plots of land had been disposed of up to the present time, and an equal number of houses and shops erected, the present estimated population consisting of persons residing in houses belonging to the estate being about 8,000. The plots let on Monday, on leases granted for a term of eighty years, comprised sites for the erection of twenty-six private houses, containing an average area of 17 ft. by 62 ft., together with a site for a tavern at the junction of Thurlow-street and Faraday-street, 68 ft. by 57 ft., containing an area of about 560 square yards. The

sites for the private houses were all readily let at an annual rental of from 5*l.* to 7*l.* each. The site for the tavern, which was described as one of the most valuable plots on the whole estate, commanded an active competition, and was eventually let at a yearly rental of 270*l.* The result of the day's letting amounted to an annual rental of 428*l.* 15*s.* The aggregate rental of the plots on the estate let up to the present time is upwards of 6,800*l.* per annum.

THE COAL AND IRON TRADES.

The force of combination has been taught by the trade-unionists, and, above all, by the building trade-unionists, to others besides the working classes proper; and we now have those engaged in trade or commerce, as well as proprietors and capitalists, combining, virtually or purposely, to raise prices to heights dictated solely by their greedy desire to make money, and only limited by the impossibility to extract more from the public purse. The principle of competition in this respect is a failure,—for the present at least; and the question is, what sort of principle is to supersede it? Co-operation has been considered the proper antidote or remedy for the evils of competition; but what is combination but a kind of co-operation? Coal-owners combining are just coal-owners co-operating; and so it is with coal-dealers who follow suit; so is it with iron-owners and dealers. The poor coal-workers force their masters to raise their wages 9d. per ton, and forthwith the price of coals is raised 9*s.*! A host of intermediates are attacked by the epidemic, and act upon a like principle; and by the time the coal reaches the consumer, 9*s.* are by no means the whole increase on the price. No one is satisfied with his previous profits: each must have more; and it is only the absolute inability to get more still, that arrests the price at last. The price of butchers' meat has no doubt been increased in a similar way by intermediates or middlemen; and no wonder one hears, as the writer of this happens to have done, of a mere hander-over of cattle, or small salesman, *earning* 15*l.* on a single transaction, and another paying 30*l.* for diamond earrings for his wife (who has absolutely become insane, and raves about millions of money, in consequence of her husband's extraordinary prosperity).

Whether coals will fall in price during the coming winter seems very doubtful: in the meantime, a mania appears to have seized upon the coal-owners and traders.

At a meeting of West Yorkshire colliery proprietors, held at the Queen's Hotel, Leeds, it was unanimously resolved to maintain the present high prices for coal.

Some unconscionable wretches in the north have announced another rise of 5*s.* a ton. It is to be hoped they will have just the same sort of success as if they had insanely called it 55*s.*

Meantime, other countries are benefiting by the British coal mania; and so are our own colonies. The finest quality of steam coal (equal to the best Lanarkshire) is now being sold free on board at New London, Nova Scotia, at 8*s.* sterling per ton of 20 cwt. The same quality of coal is now selling free on board at the Broomielaw, Glasgow, at 24*s.* per ton of 20 cwt.!

The search for more coal still continues, and with success; but are not the searchers bitten with the coal mania themselves? And will they not just charge "the market price" to the public, as do others? Or will the principle of competition induce *them* to forego the powerful influence of combination or co-operation amongst their fellows? Coal consumers are working the co-operative principle in self-defence. A co-operative society is being organised at Leicester among the working classes. A committee reports that coal could be bought at the pit's mouth at 10*s.* per ton, and good household coal at 8*s.*, being from 10*s.* to 12*s.* per ton lower than the prices demanded in Leicester! The committee recommend that the coal be conveyed by canal instead of by rail.

Much good may be done in economising fuel, as by the *Builder* fire, now coming to the front again, on the small or domestic scale, and also by other means on a larger scale. The manufacturers of Sheffield, goaded to make experiments in the way of discovering new sources of fuel supply, have been pleased by a new process, which has been immediately adopted,—a process of burning engine slack into coke. Seeing that coke cannot be had under 30*s.* or 35*s.* per ton, the discovery promises to be exceedingly valuable, and is being very generally tested in all directions.

Speaking of the hardships of the coming winter, the *Sunday Magazine* for October says:—

"Food is dear, fuel is dearer, the potato crop is diseased [not much—only sufficient to be an excuse for an outrageous rise of prices, perhaps]; struggles of labour and capital become more intense; the English labourer, slowest and most immovable of men, has begun to agitate; the whole under-stratum of society appears to be heaving. What is to be the result? Or to look only to what is immediate, how is the winter to pass over? If the upper and middle classes will feel a difference, and if the working classes will find that nearly all that they have gained in higher wages is taken back in higher prices, what will become of that class whose incomes, fixed and unelastic, can undergo no improvement? What will become of the clergyman and the teacher, the clerk and the annuitant, the widow and the invalid, who find it so hard to make ends meet even when the times are favourable, and who cannot but be checkmated when prices suddenly rise? It is a strange experience to come upon us in the heart of a spell of such unwonted prosperity. It will at least serve to give scope to the thoughtful benevolence of those who are not satisfied with appeasing the outcry of the noisy, but would fain contribute to the adjustment of more honourable claims."

There seem to be symptoms of a decline in the prices of iron, which bid fair for a fall in coals also. The following prices are quoted by Messrs. Underhill, the leading iron merchant firm of South Staffordshire, at Wolverhampton:—"We have this day (1st October) reduced the price of iron as under, from our list of July 12th, 1872:—

Bars, hoops, and strip	3*l.* per ton.
Sheets and plates	3*l.* per ton.
Tin-plates	2*s.* per box.
Iron wire	1*s.* per bundle."

The iron trade still displays an upward tendency in Belgium, but prices are rather uncertain, and vary considerably from day to day. Merchants' iron makes from 12*l.* to 12*l.* 16*s.* per ton; refining pig, from 5*l.* to 5*l.* 12*s.* per ton; and plates, between 17*l.* 4*s.* and 18*l.* 8*s.* per ton. Rails average about 12*l.* per ton. Some works show little inclination to undertake fresh rail contracts, but others display a readiness to accept even lower rates than the average quotations. Old rails have advanced from 7*l.* 4*s.* to 8*l.*, and in some cases to 8*l.* 4*s.* per ton. The French iron trade continues in rather a feverish state. No. 1 rolled iron has been dealt in at the Haute-Marne at 12*l.* 16*s.* per ton. In the Meurthe-et-Moselle pig remains in great demand, and it is very difficult to obtain deliveries with punctuality, as there is scarcely any disposable stock. The export iron trade of France is considered to be extending. Germany, Italy and Russia have forwarded the most orders of late. The production of Bessemer steel is also increasing in France; the Denain and Anzin Forges Company has concluded a contract with the Northern of France Railway Company for 80,000 tons of steel rails, to be delivered in the course of the next ten years. The French coal trade remains in much the same state; neither merchants nor proprietors of works have been able to lay in all the supplies which they require. In common with their Belgian *confrères*, French colliery-proprietors complain of a great scarcity of working miners. There is still much activity in the Belgian coal-mining districts.

THE IRON AND COAL TRADE IN THE NORTH-EAST OF ENGLAND.

ERECTION OF NEW FURNACES.

The iron trade in the Durham and Cleveland districts is in such a state of activity that the erection of new blast furnaces is necessary. The district at present contains 136 blast furnaces, against 127 erected in August, 1871; and these are reported to be producing 162,808 tons of pig iron per month, or nearly 2,000,000 tons per annum. But increased furnaces are required, and seventeen are now being built, which will give an increase of 15 per cent. on the present productive power. Of these new furnaces the Lackenby Company are building two near Eston; and Bolckow; Vaughan, & Co. one at the same place; Cochrane & Co. one at Cargo Fleet; W. Whitwell & Co. two at Stockton-on-Tees; the Consett Iron Company, one at Consett, near Durham; the North of England Coal and Iron Company one at Carlton; the Rosedale and Ferry-hill Iron Company two at Ferry-hill; Downey & Co. two at Coatham, near Redcar; the Tees Bridge Iron Company two at Stockton-on-Tees; Robson, Maynard, & Co. two at Redcar; and Messrs. Thomas Richardson & Co. two at West Hartlepool.

In connexion with the coal trade of the district new mines are being opened in several parts of it. A new shaft is being sunk at Crook Hall, near Durham, and at Waldridge Fell preparations for opening two pits are in progress. The owners of the Byron Colliery are sinking a shaft near South Edmonsley; and at Acorn Close another shaft to work the Hutton and Busby seams is in course of construction near the Charlow Colliery, whilst at Sacriston a large number of workmen's houses are being built, as well as 400 new coke-ovens. A company is also being formed consisting of practical men to re-win the Hutton seam in the county of Durham, Mr. J. Lishman being the engineer, and also one of the proprietors of the undertaking. It is said that the Beanpark Company have come across the Hutton seam, and will soon have coal in the market. The Chilton mines are also about to be worked on an extensive scale. The whole of the mining property in this district is reported to present a scene of great activity, and it is said that as the royalties are opened out and worked, there must, beyond all doubt, be an early decline in the price of coal.

THE PURCHASE OF THE BRIDGEWATER CANAL.

The purchase of the Bridgewater Canal, which amongst its other ramifications, traverses the part of Lancashire between Manchester and Liverpool, is a somewhat gigantic enterprise for two gentlemen to be engaged in in their private capacity. It appears that the purchase has been negotiated by Sir Edward Watkin, chairman of the Manchester and Sheffield, and by Mr. Price, chairman of the Midland, Railway Companies, but that the purchase is the private speculation of the two gentlemen in question, and is in no way connected with the two railway companies which they respectively represent. The Manchester Chamber of Commerce appear, however, and no wonder, to be incredulous on this point and have passed a formal resolution to the effect that "it concurs in the opinion of the Select Parliamentary Committee of last Session that waterways should not be absorbed by railways, and hereby expresses its opinion that the transfer of the canals between Manchester and Liverpool to certain railway directors is adverse to the commercial interests of the two towns." It is stated that one object of the purchase is so to alter the canal as to adapt it for steamship traffic, which would doubtless have a most important effect on the freight of cotton and other merchandise between Liverpool and Manchester.

THE GREAT FIRE IN THAMES-STREET.

Most of our readers will have heard of the great fire which took place at 148, Upper Thames-street, on Friday evening in last week, whereby nearly the whole of Mr. George Mitchell's valuable stock of marble mantelpieces, stoves, and sculptured work has been totally destroyed. Although Mr. Mitchell has in consequence lost property to the extent of between 5,000*l.* and 6,000*l.*, which is only partly insured, we are happy to say that the loss is not ruinous. The circumstance of this fire is only one more striking incident in a very singular career.

From a book which has recently been published, "The Romance of Peasant Life in the West of England," by Francis George Heath, we learn that about twenty-eight years ago Mr. Mitchell was a poor farmyard boy in Somersetshire, earning 4*s.* a week in the employ of a hard and cruel master. He possessed, however, a singular amount of energy and perseverance. At nineteen years of age he left his native village,—Montacute, near Yeovil,—and although he could not read or write, he came to London. He had previously picked up some knowledge of the stone-mason's trade. We extract the following from the book to which we have referred:—

"The remainder of George Mitchell's career may be told in a few words. During the twenty-five years that he has been in London he has exhibited a truly remarkable amount of perseverance and ability in the prosecution of his business. From step to step he slowly and surely advanced. From a mason's lad he became a journeyman; and from a journeyman a small proprietor; and from the position of the small proprietor he advanced to that of the rich and prosperous merchant; and I am assured that at the present time his business is one of the most prosperous of its kind in England. 'But,' said Mr. Mitchell to me, 'in my great prosperity I have not forgotten my former condition in life. My heart bleeds for the poor farm labourers in my native village, and I have told them that if the farmers will not better their condition, I will guarantee to find employment for a number of them in connexion with my own trade in London.'"

Mr. Mitchell has taken a very active part in the agricultural labourers' movement, and his time and his money have been expended upon the cause. We are glad to know that the present loss will not in any way interfere with his business. The Upper Thames-street branch is now being temporarily carried on at 1, Duck's-foot-lane; his show-rooms in the Brompton-road are full of stock; and his works in Walton-street, Brompton, are in full activity.

CONSECRATION OF ST. GILES'S PARISH CHURCH, READING.

St. Giles's, Reading, has been enlarged and restored, and is now open for divine service. The work of restoration and enlargement embraced the demolition of the former chancel, vestry, sham arcades, and the whole of the roofs throughout; the nave being now lengthened out eastward some 22 ft., and new north and south transepts, each 22 ft. by 28 ft., added on either side, thus increasing the area of the body of the church to the extent of 1,870 square feet. An entirely new chancel, 42 ft. by 22 ft., has been erected, with a vestry on the north side, 32½ ft. by 18 ft.; a chancel aisle for children on the south side, 26 ft. by 18 ft.; and a porch at the south-west end of the south aisle, 12 ft. by 10 ft. internally. The interior dimensions of the church now are:—Extreme length from east to west, 126 ft.; width across nave and aisles, 70 ft.; width of nave and transepts, 85½ ft.; height to ridge, about 42 ft. The new walls are built of brick and rubble stone, with flint facing on the outside, Doulting stone being used for all exterior dressings, including the traceried windows, which are mostly of large size. Corsham Down stone has been used for all the dressings on the inside, including the sedilize, with polished granite shafts, piscina, &c.; the various steps, kerbs, and landings being of Forest of Dean, York, Pennant, &c. The new roofs, constructed chiefly of pitch pine, are of high pitch and open-timbered, having principals at frequent intervals, of the collar-beam type, with moulded ribs springing from the wall-plate, forming a series of pointed arches, which, with the great number of curved wind braces introduced in the sides of the roofs, are effective when viewed from below. These roofs are covered with local tiling, of the manufacture of Messrs. Wheeler Brothers, of Reading, the ridges being formed with ornamental red tiles, supplied by Mr. Cooper, of Maidenhead. The church is seated throughout with low pitch-pine benches of simple design, fixed to boarded floors. The remainder of the floor-space is paved with 6-in. tiles, of three colours. The chancel floor, except a portion occupied by choir-stalls, is also laid with tiles of a richer design. Seats of wainscot oak are placed in the chancel for the accommodation of the choir, with prayer-desks at the west end for the clergy. The pulpit is of wainscot oak, semi-octagonal on plan, having six panels round the sides filled with traceried heads, and carved paterae along the cornice. The pulpit proper rests on a base of rubbed white Mansfield stone, approached with four steps of the same material. The nave arcades consist of four wide-spreading pointed moulded arches on each side, resting on three somewhat slender pillars, with deeply-moulded caps and bases; these pillars being small in diameter and few in number obstruct the view only to a small extent. The chancel arches, with their moulded members, carved capitals, and clustered shafts of polished red granite, have an effective appearance, improved by the metal screens on each side, with gas-jets along the top (by Mr. Leaver). A low metal screen and gates separate the chancel and nave; these stand on a low wall of wrought and moulded stone, with three central steps leading up to the chancel. The portable furniture of the church, such as the Litany-desk, font-cover, vestry-table, &c., are executed in wainscot oak, from the architect's designs; the communion-table is made of old English oak, selected from the old timbers of the former church, by the clerk of the works.

The walls throughout the interior are plastered with trowelled stucco, and the spaces between the rafters of all the roofs are lathed, plastered, and whitened. The warming and ventilation of the church have been carried out by Mr. Woodcock, of London and Paris, and are on the "hot air" principle, a special vault being provided for the apparatus under the vestry, and small lids have been formed in the wooden floors under the seats, for the purpose of assisting the warming and ventilation of the whole church. The spaces under the floor are concreted over to the thickness of 6 in., and the concrete and the whole of the floor timbers have been washed over with a chemical solution to prevent the growth of fungus and the spread of dry rot. These precautions are due to the architect, and were included in the contract.

The works to the tower, which consist of a new stage and a lofty stone spire, are matters for a second contract, now entered into by the Messrs. Davis, but certain works to the lower stage have already been done. These consist of a new west doorway, a new tile floor and steps, sundry repairs to the walls, and a screen of pitch-pine under the tower arch. The ceiling of the ringing-floor has been cased with pitch-pine boarding stained and varnished, and coffered with old oak ribs and bosses from the former work. The porch at the west entrance has been removed, and the approach generally improved. The carving has been done by Mr. Earp, of London; some of the heads in the arcades, &c., are quite works of art, and reflect the highest credit on the carver, whose abilities have a wide and enduring reputation. The whole of the works of the restoration and enlargement of the church have been carried out by Messrs. J. & T. Davis, of Banbury, builders, at a cost of between 7,000*l.* and 8,000*l.*, from the designs of Mr. James Piers St. Aubyn, architect, London, under the immediate supervision of Mr. Robert Damper, as clerk of the works.

The whole of the gasfitting arrangements were done by Messrs. Wright & Shackel, of Reading. Twenty polished brass Gothic standards were so arranged in the church that an equal light was everywhere observable. Two brackets with triple lights were fixed in the entrance porch, a small Gothic standard to the pulpit, and corona for the vestry.

An improvement has been effected in the exterior by taking down the high iron fence, which rendered any good view of the church almost impossible. This has been reduced about 2 ft., and re-fixed in a more modern style by Messrs. Wright & Shackel.

Among special gifts may be enumerated the east window, representing our Lord in glory, presented by the Misses Hulme, and the two-light window, also in the chancel, presented by Mr. O. C. Maurice, and Mr. Lowndes; both these windows were executed by Messrs. Clayton & Bell: the reredos, executed by Messrs. Powell, of London, in "opus sectile" mosaic, the joint gift of the Revs. A. A. Cameron, B. R. Body, C. R. Honey, and the Misses Hulme; two-light window, by Ward & Hughes, replaced with additions by Lady Dukinfield, in memoriam; two-light window by Hardman, in memoriam, presented by Mrs. Sherwood; one light of a painted window, given by Messrs. Gladden & Son, which will be fixed as soon as a second portion is provided

PARISH MORTUARIES.

The St. George's, Hanover-square, Committee of Works having been requested by the vestry to consider the necessity or otherwise of having a mortuary or mortuaries in the parish, together with a suitable site, and the cost of erection, the surveyor reported that, in pursuance of instructions, he had written to forty parishes and district boards on the subject, and received twenty-six replies. The St. Pancras Vestry returned for answer that they have no mortuary, but there is a dead-house in the workhouse, which, however, is seldom used but for paupers. St. Saviour's had no mortuary, nor had Mile-end Old Town, or the Plumstead and Westminster District Boards of Works. The Strand District Board of Works had no mortuary, but dead-houses in the different parishes of the district. Rotherhithe had a dead-house in the churchyard for the reception of dead bodies found in the Thames, but no mortuary. Hampstead had a dead-house, under the control of the guardians, which they considered quite sufficient, without a mortuary. Camberwell had no mortuary, but a dead-house in the cemetery, which was in the parish. Kensington has no mortuary, but the vestry have the subject under consideration. Shoreditch had at one time no site for a mortuary, but it now possesses one at the rear of the Vestry-hall. St. George the Martyr's has no mortuary. The Wandsworth Board of Works has six parishes in the district each of which possesses a dead-house. St. Mary's, Newington, has a mortuary in Manor-place, which the authorities invite the surveyor to inspect. The Chelsea Vestry have replied that they have two mortuaries,—one for the poor entirely. From Fulham the answer was that the mortuary was seldom or never used. St. George's in the East had no mortuary, but a dead-house, where bodies were taken to await an inquest. The Hackney authorities have had a mortuary since 1866, used considerably, and by respectable people. During the past year 158 dead bodies were deposited in the mortuary. St. Olave's, Southwark, had no mortuary, but a dead-house, available for casual street deaths. The Islington Vestry have a mortuary, under the control of the guardians, in the grounds of the chapel of ease. Here were taken the bodies from the workhouse infirmary, and bodies awaiting an inquest; but it was seldom used by the poor. Clerkenwell has had a mortuary since 1866, but it was not extensively used. There was a dead-house at the workhouse for dead bodies and bodies awaiting a *post-mortem* examination. Paddington Vestry replied that they had a dead-house in St. Mary's Churchyard which had been improved so as to be almost as good as a mortuary, and was used twelve times last August. St. Martin's-in-the-Fields has a mortuary. The City authorities sent an account of the mortuary in Golden-lane; while the St. James's, Westminster, Vestry had no mortuary, and no site. Mr. Mitchell considered it necessary to have a mortuary,—a decent place, and not a receptacle for contractors' coffins,—and he would, therefore, move that the Vestry be recommended to erect a mortuary. Mr. Crickmay seconded. Mr. Walker thought there should be a mortuary somewhere near Hyde Park-corner, as one mortuary was not sufficient for St. George's parish. Mr. J. Morris did not think the mortuary necessary. The Chairman thought there should be a postponement, as there was not sufficient information. Mr. Barlow said it would be advisable, perhaps, to ask undertakers if they ever had applications to receive corpses into their houses. Mr. Walker said corpses had to be removed from St. George's Hospital, shortly after death, into undertakers' houses; and he knew of a case where a person who had died of the small-pox lay in a coffin in an undertaker's room, and a man made a coffin by the side of it. The suggestion of the Chairman as to the postponement of the question was adopted.

LINCOLN.

On Monday, 30th ult., the town council of the city of Lincoln held a special meeting, as a local sanitary authority under the provisions of the Public Health Act, 1872, and reappointed the officers of the late Local Board, at the following salaries:—Clerk, 250*l.*; treasurer, 60*l.*; surveyor, 120*l.*; medical officer, 20*l.*; waterworks manager, 275*l.*; inspector of nuisances, 100*l.*; they also decided to advertise for a sub-surveyor, a new appointment rendered necessary by the corporation having taken most of the sanitary work of the city into their own hands.

"WANTED."

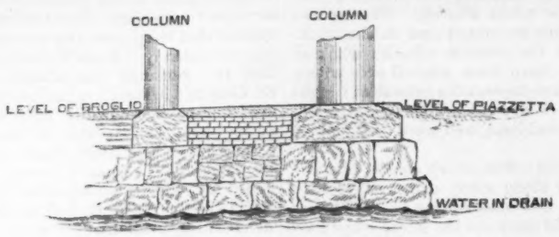
Sir,—It may suit the ideas of the powers that be to retain the testimonials of unsuccessful candidates for appointments advertised in your paper, and never so much as think that the said unfortunate people deserve a reply.

Possibly, ideas of economy have something to do with this practice; but would it not be well for parties advertising for professional men to remember that, although the returning of an unsuccessful candidate's testimonials *may* cost 2d. of postage-money, the said candidate had the same amount to disburse, *plus* an excessive amount of time, trouble, and inconvenience, happily unknown to the advertisers.

In many points, and especially so in intellectual capacity, we assert our equality with those who "want" us. Apart from that, on the ground of common courtesy alone, the trouble we are put to deserves some sort of recognition. And we have simply to assure the class of advertisers we refer to that where they retain our testimonials, and neglect to tell us whether or not we have been successful, they are guilty of behaviour anything but honourable.

Double Elephant.

*** Our advice has long been that candidates should send *copies* of testimonials, not the originals.



The Columns of the Ducal Palace, Venice.

THE COLUMNS OF THE DUCAL PALACE, VENICE.

Were the columns (of the lowest tier of arches) of the Ducal Palace any longer originally than they are now? This question has been put to me constantly by travellers of all kinds, when I have replied,—"I do not believe they were longer than we now see them, for, to my mind, they would be out of proportion, judging from existing work of the same date at Verona and other places." I have been met thus:—"But 'Murray' says they were." What says Murray's "Guide to Northern Italy," p. 391, edition of 1869:—

"The columns of the lowest tier of arches are partly embedded in the pavement, the level of which was raised (1732) about a foot, in consequence of the inundations to which the Piazzetta and Molo were subject, which gives them an undeserved appearance of clumsiness. They stand, however, not upon bases, but upon a continued stylobate, as discovered some years ago, when the Piazzetta was repaved.

It appears from observations made with care, that the mean level of the sea at Venice has risen about 3 in. in every century; so that, as these columns have been erected five centuries, about 15 in. of the lower part of them are now concealed, owing to the repeated and necessary elevation of the pavement."

Now what is the fact? About two months ago the south-west angle of the Ducal Palace was covered in, so far as the lower story is concerned, for the purpose of examination, and the removing three or four capitals, which have become so ruinous as to endanger the existence of that part of the palace. The superintendent of the works gave me permission to go in and make what observations and sketches I wished.

When the pavement was removed, I found that the bottoms of the columns were precisely on a level with the existing pavement of the Broglio, which is about 4 in. raised above that of the Piazzetta. The columns rest upon blocks of Istrian stone, the upper one but a trifle larger than the diameter of the column, and rough-hewn, so that they never could have been finished bases. The edges of these upper blocks have been cut away in a slanting direction, to allow the close-fitting of the paving-stones just up to where the column rests upon the block, neither covering the joint nor below it.

These blocks are, in the opinion of the superintendent, the original foundation of the building, and they seem to-day as perfect and good as when placed there. The space between each column, or rather the group or tier of stones on which they stand, is filled in with red bricks and rough stones. Three layers of blocks were seen, the water (which rose and fell with the tide coming into the drain which carried off the rain-water) covered whatever there was below; but, I believe, so far as I could judge by feeling with a stick, that under the water there was also solid stone.

It was not possible to insert even the point of a penknife between the column and the stone below, so sharp and close-fitting are they.

John Bunney.

THE TRADES MOVEMENT.

London.—On Wednesday last Messrs. Corbett & McClymont were waited upon at West Brompton by several gentlemen desirous of ascertaining what were the prospects of a speedy settlement of the dispute. The deputation were frankly told that it rested entirely with the men themselves how long the conflict lasted, as the firm had sufficient hands, and had no intention of receding from the position it had taken up. The feeling of the public was adverse to the firm; but its friends, who were acquainted with the facts of the case, quite approved of the course it had adopted. The reason why the increased wage was withdrawn, had not yet been accurately stated. The firm had never objected to pay a mechanic 8½d. an hour, or even more, no matter what branch of the trade he belonged to, provided he was worth the money. On the occasion of the recent arrangement with the Master Builders' Association, the foremen of the various departments were directed to make the halfpenny increase wherever it was deserved. Before, however, a week had elapsed, dissatisfaction arose, because all had not been treated alike, and placed on one and the same footing. The firm thereupon resolved to return to the old system, and the strike took place solely and simply on account of its refusing to pay good, bad, and indifferent alike. The 52½ hours there was no objection to whatever; but, at the same time, it should be understood the firm did not occupy the position of ordinary builders and contractors who regulated their prices by the ruling or standard wages of the day; but more resembled an independent gentleman employing workmen to build on his own land. No matter what he paid, he could get no more than a certain rent for his houses, and was fully justified in purchasing his labour cheap if he could, without reference to the custom or regulations of the trade.

Ten years ago, Mr. M'Clymont added, he and his partner Mr. Corbett came into possession of the Redcliffe Estate, when they commenced operations with fifty houses, and year by year since had gone on building roads, squares, terraces, and crescents, until the property had arrived at its present state of prosperity and extensive proportions. During that time they had got around them a great body of workmen, whom they were now sorry to part with, but whom they had never ceased to classify or pay according to merit and ability. They never had, and never would recognise any hard and fast rule, placing all men on an equality as mechanics, and reducing the highly skilled to the same level as the lesser skilled operative. That being so, Mr. M'Clymont thought the men might have been a little more circumspect in some of their statements; while, as for Mr. Matkin, the carpenters and joiners' secretary, pretending to speak contemptuously of middlemen, he should like to know what would become of the workmen if there were no middlemen, in the building trade especially. He had himself risen from the ranks, and perfectly well understood that part of the question, and his opinion was it would be a poor look-out indeed for labour if there were no enterprising men of that kind.

The closing meeting of the Amalgamated Building Trades' committee, which originally represented the masons, carpenters, joiners, bricklayers, plasterers, painters, smiths, and labourers, in the late struggle, has been held in the Sutherland Arms, St. Martin's-lane, when the following resolution, moved by Mr. Coulson, bricklayer, and seconded by Mr. Sainsbury, plasterer, was passed, viz.:—

"That this Committee, having accomplished the work for which it was constituted, shall be and is hereby dissolved. At the same time we express our willingness to co-operate with all other bodies should any difficulty hereafter arise which may affect the general interests of the building trades."

After a vote of thanks to the chairman of the evening, and to Mr. George Shipton, the secretary, the committee was formally declared dissolved, and the meeting broke up.

A settlement has taken place at Messrs. Gillin's firm, and the joiners have resumed work on condition of working fifty-three hours per week, with the usual time for breakfast and dinner, leaving off at one o'clock on Saturdays.

A large builders' labourers' meeting has been held at Kingston-on-Thames. Messrs. Kenny & Halloran addressed the meeting, and the following resolution was proposed and carried unanimously:—

"That in the opinion of this meeting of builders' labourers of Kingston and the outlying districts, we pledge ourselves to unite with our brother labourers in London in any steps they may take to obtain 6d. per hour for our labour, which we think is little enough to enable us to procure the common necessaries of life, at the present increased prices."

Another builders' labourers' meeting has taken place at Chelsea New Bridge. The meeting was addressed by the same speakers, and a similar resolution was passed.

Birmingham.—A meeting of the glass and china decorators of Birmingham has been held at the Shakspeare's Head, Livery-street; Mr. Griffiths in the chair. Mr. Biddle referred to the indifferent attitude of several employers, which, he believed, was calculated to bring about serious complications. After some remarks from other workmen present, a deputation was formed to wait upon the Brassworkers' Society, with a view to combination, and the meeting was adjourned.

Edinburgh.—An aggregate meeting of the Edinburgh joiners has been held in the Waverley Hall, to consider "the present condition and future prospects of the trade with reference to the rate of wages, and on the position necessary to maintain the balance of power between capital and labour." Mr. Rintoul was called to the chair. The meeting was first addressed by Messrs. Goodfellow and Beveridge. Mr. Ramsay moved:—

"That this meeting, being convinced that we, as a trade, are not in a properly consolidated position,—the result of which being that we do not, and cannot, in our present position, receive that remuneration for our labour to which we are entitled, and that we are not in this respect on an equal footing with the other trades connected with building,—and that in the past we have been guilty of a great dereliction of duty,—we henceforth resolve that for the future we shall use all lawful and constitutional means of a practical kind within our reach for our pecuniary advancement, which, of necessity, includes our moral, social, and intellectual elevation."

Mr. George Baird seconded the motion, and it was unanimously adopted. In respect of the second part of the programme of the business, Mr. Paterson gave a statement as to the present condition and future prospects of the trade. He said that the trade in Scotland never was better; and though in Glasgow it might not be so good this winter as in the past winter and spring, in Edinburgh it would be equally good with what it had been recently. He thought the trade should press for an advance, and that there could be no question that they were underpaid. Mr. Thom, seconded by Mr. Nisbet, thereupon moved that they should give their employers notice of a demand for ½d. per hour increased pay, to begin on the 1st of March next; and of another ½d. per hour to begin three months later. As an amendment, Mr. Vallance, seconded by Mr. Stewart, moved that the demand should be for 1d. per hour, to begin on 1st of March. A further amendment, that only ½d. per hour should be asked to begin on the same date, was moved by Mr. Baird, and seconded by Mr. M'Kay. The second amendment only received 14 votes, and was set aside; the first amendment and the motion were next put together, and the amendment adopted by 136 votes against 24. It was thereafter unanimously resolved to support the demand for 1d. per hour of increase. A proposal to take up the subject of weekly pays was negatived as at that meeting, which was then adjourned.

Mr. Lowe on Strikes.—On the question of strikes, Mr. Lowe argued at great length, in Glasgow lately, against the prevalent impression that strikes permanently increased the value of commodities, or could be of lasting benefit to the working classes. Just as prices increased must the demand be diminished, unless substitutes were found. If the demand were diminished, a certain proportion of workmen must lose their employment. The rest might, indeed, gain higher wages, but that increase would be lost as improved machinery, or other agencies, reduced the cost of production. One class would be sacrificed, and the other would gain nothing.

Monumental.—A memorial cross has been erected in the grounds of Sir Percy Shelley, at Boscombe Place, to mark the intended burial-ground of the family. The design is by Lady Shelley, and consists of a sculptured base of rock-work, from which springs a rough fir-tree, nailed in the form of a cross. Three nails pierce through the cross. The inscription on the rockery is in solid lead letters, the words being "The resting-place." The work has been executed by Mr. S. Horner in white marble, under the personal superintendence of Lady Shelley. ——The four huge statues erected at the two ends of the Pont du Carrousel, Paris, have been entirely repaired, and covered with a coating of some composition to protect them against the weather.

NATIONAL PROVINCIAL BANK OF ENGLAND: NEWCASTLE-ON-TYNE BRANCH.

Mr. John Gibson, Architect.

NATIONAL PROVINCIAL BANK OF ENGLAND:
NEWCASTLE-ON-TYNE BRANCH.
STRONG ROOMS.

Our view of the above building is drawn from a photograph, which also shows the upper part of the well-known tower of St. Nicholas Church. Adjoining the churchyard is the resident clerk's and messenger's entrance to their apartments.

The front in Mosley-street is 85 ft. in length, and in Dean-street 36 ft. The height of the building averages 65 ft.

The walls generally are built of brick, the two street fronts above-named are faced with Kenton stone. The building is constructed fire-proof on the Dennett system.

The banking-room on the ground-floor is entered from Mosley-street, and is 72 ft. long by 28 ft. wide; its height being 22 ft. It is lighted by seven large windows; the ceiling, being coved, is groined to receive their semi-circular heads: the glass is embossed, and protected externally by elaborate wrought-iron grilles in lieu of shutters. On each side of these windows are polished red granite shafts. These are altogether well designed, and on another occasion we will give a view of one of the windows at large.

The artificial lighting is by three sunburners with ornamental zinc gilt pendants, which act as ventilators; the field of the ceiling being panelled.

The warming apparatus, contracted for by Phipson, is a hot-water one; the warm air being admitted into the banking-room through flues in the walls above the level of the desks, and by other gratings in front of the counter.

The fittings are of Honduras and Spanish mahogany, contracted for by Sopwith & Co.; the public space being laid with Minton's tiles. The entrance has two sets of doors,—a folding pair on the outside, screen doors on the inside; and the outer doors are enclosed by night doors lined with iron.

The strong-room which contains the treasury is formed in the middle of the building, having another strong-room immediately underneath; its walls and arching are lined with ¼-in. iron, and it is completely fitted for deeds, securities, vouchers, and so on. The treasury itself is placed within this room, and is 6 ft. 6 in. square by 7 ft. high. It is constructed throughout of three thicknesses of wrought iron, with non-conductors of heat between. The door to this, as well as to the outer chamber, is hard steel plated: into the lock of the latter a night-bolt passes from one of the residents' rooms; there is also an iron gate on the inner side of the door last-named. There are about nine tons of metal employed in the construction of the above, which was contracted for by Chubb & Son. In addition to the above-named, but below the banking-room, are two strong-rooms reached by a distinct staircase: one of these rooms is 41 ft. long by 13 ft. wide for books: the end of this grilled off is a strong-room for the use of customers. It is inclosed with fireproof walls and arching, and is fitted with a centre rack and side shelving. Adjoining is a store for stationery. The other strong-room is in the rear of the building, and is of smaller dimensions,—it is also fireproof; and all are warmed by the bank apparatus, and have distinct ventilating-shafts.

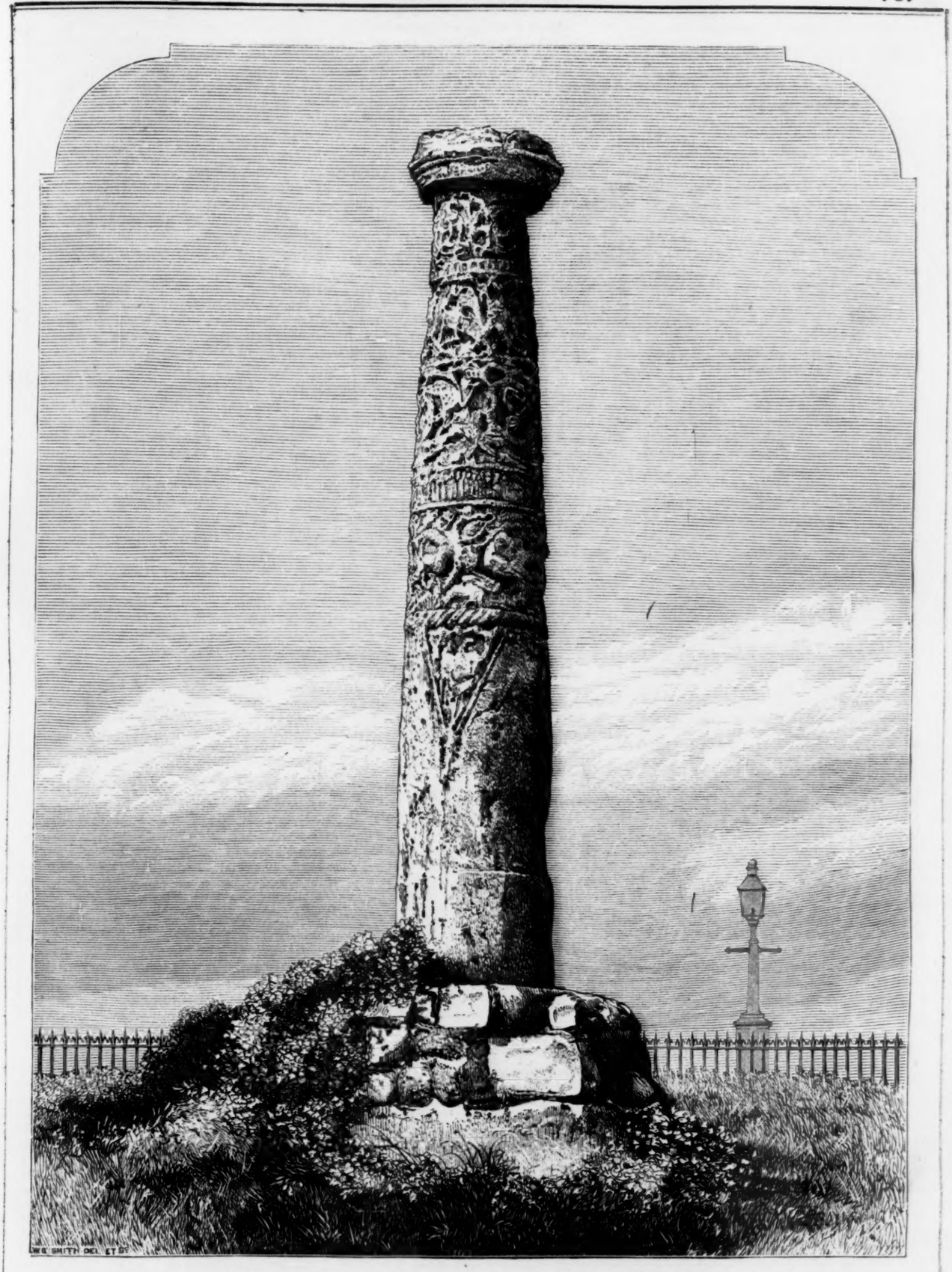
A hoist communicates with the banking-room. At the end adjoining Dean-street is the clerks' luncheon-room, lavatory, &c. The remainder of the basement consists of kitchen and other offices.

The two upper floors of the rear portion of the building are occupied as dwelling-rooms by the resident clerk and messenger.

The two upper stories of the main building are occupied for commercial and legal purposes, and in the attics are rooms for a messenger.

Mr. John Gibson, of Westminster, is the architect; Mr. Joseph Elliot the contractor for the building works; and Mr. Glover was the clerk of works.

The cost of the building and fittings has been about 14,000*l*.



ANCIENT PILLAR IN WOLVERHAMPTON CHURCHYARD.

THE ANCIENT PILLAR IN WOLVERHAMPTON CHURCHYARD.

When the British Archæological Association visited Wolverhampton in August last, much interest was excited by the ancient pillar-stone or cross which stands on an elevated spot in the churchyard there, on the south side of the church, and its probable date was discussed with much amusing pertinacity on several occasions during the visit. In our notice of the meeting we mentioned something of what had been said as to this very interesting monument, and promised that we would give a view of it on another occasion. We fulfil this promise in our present issue, and shall be glad if it enable some of our correspondents to throw light on its date by comparison with other monuments or otherwise. We shall not scruple to repeat part of what we have already printed so as to bring together the various opinions expressed.

It has been long called locally "the Danes' Cross." Mr. Levien, on first introducing the subject, said it was so named from the remains of what were supposed to be the figures of ravens sculptured upon it; ravens having been held in great veneration by the Danes as the

companions of their god Odin, as eagles were believed to be those of Jupiter, the owl the attendant of Minerva, and the dove of Venus. The Danes had two emblematical ravens—one indicative of victory and the other of defeat; and the question was which of these two the ravens seen by some on this pillar were. It was known that the Danes committed excessive ravages in Mercia, and it was thought on the one hand that this pillar was put up to commemorate some victory by that people, as it was not usual for people to commemorate their defeats. The Saxons, on the other hand, were quoted to show that the Danes suffered an enormous defeat in this part of Mercia; but that was the Saxon version, while there was no doubt that the Danes succeeded in firmly establishing themselves there. The cross, he thought, might have been erected to commemorate some victory; but whether of the Danes or Saxons remained undecided.

In a report on the church made some years ago, Mr. Christian says, he thinks the pillar may be called Norman work, and that it may have formed the shaft or pedestal of a cross, the upper part of which has been long destroyed. The material of which it is composed being sandstone, and the block being set contrariwise to its quarry bed, the weather has greatly acted on its surfaces, and, by ploughing them out in grooves and holes, has produced marks and indentations which have so much the appearance of the carver's work, that at first sight it appears much more richly wrought than a closer examination proves it to have been. The upper step is circular in form, and is a single block of stone 7 ft. in diameter. Other steps, continues Mr. Christian, probably lie buried beneath the surface, the soil having been much raised in this part of the churchyard. This supposition as to buried steps, let us say at once, has been disproved. A hole was dug and no other steps were found. The pillar is in this respect as it was originally placed.

Mr. Gordon Hills, in expressing his opinion as to the date of the monument, said it was well known that in ancient times crosses were erected merely as landmarks. Without any idea of a religious character, the Romans raised crosses as landmarks; in fact, it was one of their rules, when surveying a country, that crosses should be erected at special points. It was very probable that a cross, occupying the position which this did, belonged to very ancient times, but its date depended very much upon what meaning they attached to the words "very ancient." He had no hesitation in saying that this cross was of great antiquity; but he failed to discover anything known of the Danes upon it, or to see anything of the ravens of the Danes about it. They would observe certain open spaces in the lower part, and then certain figures in the form of half a lozenge. Five of these could be traced half-way up, leaving five spaces below for a figure under a canopy. In one of these spaces there were distinct remains of a figure. The figures to be traced above those canopies showed that it could not be a Danish, but that it must be a Christian monument. He believed he saw in one the ox of St. Luke; in a second, the angel of St. Matthew; in a third, the lion of St. Mark; and in a fourth, the emblem of St. John; while the fifth was filled with scroll-work. This showed that the design was to give the symbols of the four Evangelists, and from this they could venture to hazard a notion of what filled the spaces below the canopies; and from the absence of symbol in the fifth canopy, they could venture to assume that in the fifth space the Crucifixion was represented. The enrichments above were merely scroll-work, with various animals,—griffins and others,—represented in grotesque form and of monstrous description. He had examined the top of the column, and found evidence of provision for the insertion and fixing of another stone, probably a cross. He had no doubt it was Norman work, and belonged to the twelfth century.

Mr. Godwin, when an opportunity occurred in the evening, said he felt bound, in consequence of an inquiry addressed to him, to say that he could see no reason whatever why the pillar should not be of the Saxon period. Its outline, which had the *entasis* of an antique column, was like no Norman work of the kind that he had ever seen, and this outline, with the bands which were around the column, made it approach that baluster form which was generally understood to show the work of an earlier people than the Normans.

Mr. Edward Roberts was at first disposed to consider that the work had been executed by Saxon workmen, just before or after the Conquest; but afterwards came to the conclusion that it must be a work of the Norman period, dating from about the year 1185 to 1190.

Speaking on a later occasion, Mr. Hills said, that by the observations he had made, he had not intended to combat the question whether the pillar was Norman or Saxon. The point to which his remarks were applied was as to whether the origin of the pillar was Danish, as had been believed by some persons,—whether it owed its origin to Christianity or Paganism. He thought that any one who studied the matter, and tested the different opinions that had been expressed with regard to the pillar, would have no difficulty in arriving at the conclusion which he had arrived at with regard to it, and which it appeared Mr. Godwin had arrived at, viz., that it owed its origin to Christianity. As to whether it was of Saxon origin, that required a close examination, and a careful comparison of the carvings upon the pillar with other carvings, which were known to be Saxon, before coming quickly to any definite conclusion. He had often endeavoured to show in his arguments that the Saxons had more to do with architecture and monuments than for many years past it had been the custom to allow them. Still he thought that if any one would carefully look at the pillar, particularly at the scroll ornaments upon what he might term the second tier, he would be forced to the conclusion that it belonged to the twelfth century, for there was a decided tendency to Early English work in its carvings. That was his belief. The Danish theory was perfectly untenable. There might be something said in favour of the Saxon theory, but he thought the balance of argument was established in favour of a still later period.

We see nothing to discredit the belief that it is of Saxon workmanship, and are ready to believe that, having been erected by that people to commemorate a victory over the Danes, it became known as the Danes' Cross for the same reason that we call Mr. John Bell's fine work in Waterloo-place the Crimean Monument. The cap, as it seems to us, if original, can scarcely be in its original place. This pillar is a most interesting relic, and we trust that it will be carefully preserved by the people of Wolverhampton. We are almost inclined to suggest the erection of a sort of umbrella, as rain and frost are gradually destroying it.

THE SEWAGE PROBLEM AT BISHOP'S STORTFORD.

The local board having decided to establish an irrigation-farm, plans were prepared, and Messrs. Lawson & Manser were contracted with to carry out the necessary works for 10,000*l*. About 90 acres of land were required, situated far enough outside the town and having a sloping surface, so that the effluent water could run into the Stort. A main drain was laid down, conveying the sewage to a suitable point, where screening-tanks and pumping-engines were erected. A portion of the farm was marked out and prepared with open carriers and drains for flooding; and the ground this year is bearing its first crops, while the work of remodelling the drainage of the town is in active progress and approaching completion.

The principle acted upon in draining the town is that of keeping the rainfall and surface-water separate from the sewage, the former being discharged into the river. Two 15-horse power horizontal engines are at work forcing the manurial liquid up to the irrigation fields, the highest part of the undulating ground exceeding an altitude of 80 ft. above the level of the outfall tanks.

During the progress of these operations, Mr. James Odams, of the Grange, Bishop's Stortford, an active member of the local board, has devoted much attention to the whole question of the disposal of town sewage, and, after personal inspection of the working of many different systems, has arranged, in connexion with the works just described, a practical exposition of what he believes to be the most economical solution of the sewage problem. The *London Daily Chronicle* gives an elaborate account of Mr. Odams's plan, which essentially consists in screening the rough sewage with faggot-bundles (easily slushed afterwards), and so separating the worst of the sediment; using behind the faggots a vertical screen of copper wire-gauze of 50 meshes to the lineal inch, so that the fine scum is caught on its surface, to be also cleansed by a douche, as the faggots are. The bad odour is thus nearly removed. The cleared liquid then runs through perforated lead piping over the ground of the farm in gentle showers forced by the steam-pump to a height of 10 ft. to 15 ft., distributing it equally over the entire surface of the field in drizzly showers, the arching jets of spray spanning to 20 ft. on each side of the perforated pipe, and leaving no spot unwetted.

"The great advantage claimed for the new system is that, by artificial showers, it applies the fertilising liquid with the utmost economy, as well as in the manner most natural and beneficial both to plants and to the soil. Not a particle is wasted, unless it be by evaporation, which is not considered to be serious in amount. But in the flooding system, the water being its own carrier, and flowing upon the surface of the land, must of necessity saturate or overdose the nearer portion of each bed or slope before it can wet the farther side; while it is most difficult, if not impracticable, to give a full dressing to the side of a bed furthest from an open feeder, without a portion of liquid running over into the waste drain. On the fountain system no loss arises from streams sinking into cracks and fissures flowing away in the subsoil drains. The gentle showers are suitable for all crops, and may be given during any period of time, by night or day, in cloudy weather or in sunshine, as found advisable; and there is neither soaking of the roots and stems of plants, nor repletion of portions of the ground with inevitable detriment to its mechanical texture and condition.

The crops of grass cut upon the acre of old meadow land now under experiment at Bishop's Stortford certainly tell wonders in favour of this good imitation of natural irrigation.

It should not be forgotten that this new system is a mechanical improvement upon the very earliest practice in sewage irrigation; the marvellous products of Canning Park and Myre Mill, in Ayrshire, and of Tiptree Farm, in Essex, having been obtained from surface application to the growing plants by manual distribution with pipe and hose.

We understand that the entire outlay for the lead piping amounts to somewhat less than 30*l*. per acre. This, indeed, exceeds the general cost of preparing land for ordinary flooding. For though the cost of preparation at Aldershott was 40*l*. to 50*l*. per acre, and that for Merthyr Tydfil is said to have been very much more, the work at Bedford, including the covered earthenware pipes, was executed for 10*l*. per acre; and from the experience at Lodge Farm, Barking; at Mr. Hope's Breton Farm, near Romford; and at other places, the average expense of laying out may be considered to be about 15*l*. per acre. But there is this important consideration—the lead remains at all times marketable at about three-fourths of its original value; and, what is a great saving, no manual labour or attention is required to keep the field apparatus in order as with carriers, gutters, drains, stops, hatches, &c., in overflow irrigation."

Another application of Mr. Isaac Brown's invention, we may add, may also be seen in operation at Stortford. Some of the principal streets for a length of 1,000 yards are watered by fine jets from lead piping, laid down in the foot-pavement just on the inner side of the kerb-stones, the little gutter in which the pipe is inserted being filled up with asphalte, excepting, of course, where the spirting-holes are exposed, these places having small iron caps or shields to prevent injury of the pipe while giving free egress to the upward-shooting jets. It appears that by directing the jets in arches no higher than horses' legs, or by watering half the width of the roadway at once, there need be no hindrance to traffic, or discomfort to passengers in open vehicles. Objections made to this system when tried at Hyde Park are said to be here obviated; and we observe that the London authorities are urged by one of their own members to try a similar system in London.

The operations at Bishop's Stortford, both in sewage utilisation and street-watering, Mr. Odams, we understand, will be happy to show and explain to gentlemen on any Saturday during the next few weeks.

CHELSEA EMBANKMENT.

The Chelsea Embankment Committee have recommended the Chelsea Vestry to negotiate for the purchase of the Cremorne Wharf freehold property for the sum of 13,000*l*. In the vestry, Mr. Fisher moved the adoption of this report, and recounted the various previous acts of the committee. First of all they negotiated with Mr. Simpson, of Cremorne, whose freehold price was 20,000*l*. They then tried the Thames Conservators, who wanted a scheme carried out in connexion with the wharf which would have cost 20,000*l*. exclusive of compensation. There were two other schemes, one of which would have involved an expenditure of 30,000*l*. or 40,000*l*. They could borrow the money required for sixty years, and the freehold wharf would save the parish 1,000*l*. a year. Mr. Cobb denounced the idea of giving 13,000*l*. for land which a few years ago was going a begging, and he could not vote for this extra burden on a poor groaning parish like Chelsea. Mr. T. Symons reminded the Vestry that at one time the rates were 4*s*. 6*d*. without the police rate, and now all the rates were only 2*s*. 1*d*. Mr. Davidge said that both

the Thames Conservators and the Metropolitan Board endeavoured by every way to shut them out from access to the river. Mr. F. Jackson said 13,000*l.* was the price of the land only, and before the land was ready for wharfage purposes 20,000*l.* would be spent. The working expenses, too, would be considerable. The recommendation of the committee was adopted, and the committee instructed to negotiate for the purchase of the land.

THE PARK-LANE SEWER.

The great Park-lane sewer question has just been settled in a rather unexpected manner, and by the sewer itself, and stranger still in favour of H.R.H. the Duke of Cambridge, in dead opposition to the St. George's Vestry. For after H.R.H. had consented to have the sewer in Park-lane opposite Gloucester House altered, at his own expense of 140*l.*, the surveyor, Mr. Tomkins, informed the St. George's, Hanover-square, Committee of Works that during the progress of the 3 ft. 9 in. by 2 ft. 6 in. egg-shaped sewer in Park-lane, a portion of the old sewer cracked and fell in, thus rendering a new sewer necessary the whole length (about 200 ft.), so that instead of 120 ft. of old sewer and 80 ft. of new invert, there must be a new sewer of 200 ft. Mr. Tomkins thought this new sewer would be a benefit to the parish, though one of the committee entertained a different opinion.

BRISTOL CITY SURVEYOR.

At a special meeting of the Council, held on Tuesday, under the presidency of the Mayor, a lengthened report on the subject of the appointment of a city surveyor was presented. The committee recommended the appointment of Mr. Josiah Thomas on the following terms:—

That he shall not practise as an architect within the borough.

That he shall not be in business as a builder within the borough.

That he shall cease to prepare plans for laying out ground for building purposes within the borough.

That he shall not be concerned in any manner adversely to the interests of the Corporation, either within or outside the borough.

That his private business shall practically be restricted within the borough to surveys for the purpose of valuations, and valuations only.

That the whole of his work connected with the City surveyor's office shall be carried on in Prince-street, proper accommodation being afforded.

That he shall be paid a salary of 750*l.* per annum, to include the expense of a horse and carriage to be found by him.

That such clerks, draughtsmen, inspectors, and assistants as shall be deemed necessary shall be paid by the Council; but the power of appointment and dismissal of such clerks, draughtsmen, inspectors, and assistants shall be vested in the Streets Improvement Committee for the time being of the Sanitary authority, Mr. Thomas being empowered to suspend any of them.

That Mr. Thomas be allowed to collect and receive for his own use all the district surveyors' fees under the Bristol Improvement Acts; and that he shall pay over to the Corporation the net sum of 900*l.* per annum in respect thereof.

Mr. Alderman Green moved as an amendment, "That the city surveyor shall devote the whole of his time to his office, and not engage in private practice."

The amendment was negatived by 19 votes to 14.

ROADS IN BRISTOL.

A new road from the centre of the city, in the direction of Cotham, Kingsdown, and Clifton, has just been completed. It is called Colston-street, and connects St. Augustine's-place, near the Drawbridge, with Perry-road. The new road is about 450 yards in length, 40 ft. wide, and the gradient one in sixteen. This is an improvement on Park-street, the gradient of which is one in eleven, and which has hitherto been the principal route to Clifton. The carriage-way in Colston-street is macadamised, and one of the city tramways will be laid down here when the price of iron justifies the authorities entering on such an undertaking. The new thoroughfare has been constructed under the superintendence of Mr. F. Ashmead, city engineer, assisted by Mr. T. H. Yabbicom, and its construction has necessitated the demolition of several ancient buildings. Steep-street, too, has disappeared. This was a strange old street, very steep, with projecting domiciles, and used to be the route of the Welsh mail, over St. Michael's Hill, by way of Redland-lane and the Passage.

MECHANICS' INSITUTE, COED-Y-GRIC, PONTYPOOL-ROAD.

The *employés* of the Great Western Railway propose building a mechanics' institute from plans by Messrs. Lawrence & Goodman, Newport, Monmouthshire. The building will comprise a reading-room, 28 ft. by 22 ft. by 20 ft. 6 in.; a library, 11 ft. by 22 ft. by 20 ft. 6 in.; separated by a movable wooden screen, and with gallery over: these can be thrown into one for a lecture-room.

There will be a curator's residence at the end, and the entrance to the building will be an arcaded lobby, 19 ft. by 6 ft. 6 in., with circular staircase at the side leading to the gallery. This staircase will form a turret with slated spirelet roof, and the end of lecture-room will be finished as an apse forming the platform. The cost will be about 600*l.*

"WORCESTER CATHEDRAL."

The *Builder* of September 21st informs us (p. 750) "that the year 1873 will probably witness the re-opening of the entire cathedral in its *completely restored condition*."

May I venture to suggest that the present mean appearance, caused by "the lead removed from the roofs, and slates substituted, 1791" (according to "Deighton's Guide to the Faithful City"), should be amended before the entire edifice can be deemed to merit that flattering description?

So much has been done, and is in progress, with no niggard hand, in the way of restoration and amendment, that I would fain think the replacing of the metal covering must form part of the contemplated operations, and that it is a question only of time, depending for its accomplishment on the essential one of finance?

N.

THE NEW SCHOOLS FOR STAPLEHURST.

A meeting has been held at Staplehurst, to consider the amount of expenditure proposed by the School Board, in the erection of their contemplated school buildings. The tender of Messrs. Bridge & Cox, of Maidstone, which the Board had accepted, amounted to 3,307*l.*, and this was, by many of the parishioners, thought to be quite an unnecessary outlay. It was ultimately resolved by the meeting to send the following letter:—

"To the Right Hon. Edward Forster, Vice-President of the Educational Department.—Sir,—We respectfully ask your assistance to prevent the School Board of this parish from incurring a heavy outlay in the building of their proposed schools. We have 1,800 persons in the parish, and the number of children likely to attend school is about 300. Our School Board have invited tenders for the erection of the buildings, and the lowest sent in amounts to 3,307*l.*, which the parishioners consider to be a most excessive outlay. We therefore address you, as a majority of the inhabitants of this place, with a view to secure the prevention of so large an outlay, and asking you to withhold your consent."

Some seem willing to go to the length of a 2,000*l.* tender.

METROPOLITAN BOARD OF WORKS.

At the meeting last week a report was brought up from a committee of the whole Board to whom several tenders were referred for consideration, and they recommended that one by Mr. Goodyear for the Hammersmith work for 796*l.* 10*s.* be accepted; for the second work, that of Messrs. Easton & Anderson, for 800*l.*; and for the third work, that of Mr. George Wall, for 54,600*l.*

Value of Land in the City.

Mr. Dresser Rogers, as chairman of the Finance Committee, announced that the National Safe Deposit Company had paid a cheque of 5,500*l.*, being one year's rent of the triangular piece of ground near the Mansion House. This company hold a lease for this piece of ground for eighty years.

District Surveyors.

A letter was received from Mr. C. A. Long, district surveyor of Newington, stating that he was desirous of removing his office from the Walworth-road to No. 11, Clapham-road, and requesting the approval of the Board thereto.

Mr. S. Barker (representative for Newington) opposed the application, and said that Mr. Long had not been much more than twelve months at his former residence; that he was altogether opposed to the shifting about of district surveyors, as it led to great public inconvenience; and mentioned the fact that Mr. Long had not waited for the permission of the Board to make the change, as he had already vacated his premises in the Walworth-road and gone to the place he then asked permission to go to. He moved that this application be referred to the Building Act Committee for consideration and report.

Mr. Runtz, in seconding the motion, said that builders and others were put to the greatest inconvenience by the district surveyors changing their residences.

The motion was then put and unanimously agreed to.

LEAD ROOF-COVERINGS.

Sir,—In a recent published statement I observe it said, that in covering the flats and sides of roofs with lead, the sheets "were laid between 'rolls' running up and down the roof, which were protected by 'roll-caps,' also of lead, each sheet or 'cap' being only hung, as it lay inclined in its place, by its upper end, where alone it was fastened, if fastened at all, and not merely held by friction against the wood 'rolls' to the timber sheeting beneath, with which the roof framing was wholly covered." And it goes on to say,—"No better practice than this of the plumber's art of leading roofs has ever been devised," &c. Now I question this, because in my locality we have for many years been in the habit of practising a different, and as it appears to me a better, system of doing the work. In our style we neither require "wood rolls" nor "caps" when covering flats or sides of roof with lead (although, when *zinc* is the material used, we employ both); but, owing to the manner of coupling the sheets together at their sides, said coupling, if I may so speak, in itself forms "roll" and "cap" all in one. The writer very properly observes that lead gutters were, or ought to be, laid in "drips;" but, as I understand, there is much difference in practice as to the depth of these drips. In many places they are only about 1½ in., or, as in some cases, even only 1 in. deep. Now, for various reasons, I consider that far too little; and, in my opinion, for a good job, the depth of "drips" ought to be about 3 in., or as much more as you can afford, or choose to give.

Another Plumber.

ALBERT MEMORIAL: A SUGGESTION.

This costly monument, combining much that is graceful in architecture and sculpture, is now attracting crowds of visitors, who daily ascend the steps and linger in converse with the philosophers, poets, painters, and sages who are so perfectly sculptured in life-size upon the massive frieze which surrounds its base. Altogether it stands unique, and, to my mind, is unequalled by any other extant. Having said so much, it may, however, be permitted to make a remark, through the *Builder*, as to the pyramidal basement of granite steps, which would seem to have been heaped up after its erection; concealing what ought to be a pedestal or base, of character suitable to the superstructure. This pyramid of granite rises to the height of 13 ft. from the pavement of the grand plateau (which occupies a square of 74 yards), having at the angles four pedestals, about 13 ft. high, supporting groups magnificently sculptured, representing Engineering, Commerce, Agriculture, and Manufacture.

The granite steps rise from an interior base of 144 ft. square, and mount to within 8 ft. of the elevation of the massive pedestal, *which is 36 ft. in width*, exclusive of the four angular and sculptured buttresses, thus giving a very disproportionate elevation to the pedestal of a structure so varied and so massive, a width of 36 ft. by a height of 8 ft.!

Now, were all this pyramid of steps cleared away down to the level of the plateau, the pedestal finished in suitable style, as also the four angular groups, this memorial would have a vastly improved effect; besides that the surrounding woodland scenery, which is now occulted by the graduated mound, would lend grace, if not enchantment, to the view.

Looking from the Long-walk towards the Albert Hall, that building is five digits eclipsed; as viewing it from the Park-drive side, a shapeless mound of granite despoils the integrity of the monument, having the aspect of blocks temporarily heaped and deposited there, but having

no affinity to the general design, which it fearfully mars.

Were this pyramid cleared away down to the plateau, and the pediment finished, as are all our other lofty memorial columns, the sculptured figures on the frieze might still be viewed from a distance of only 12 ft.; and being thus freed from constant manipulation, would form a rich finish to a clearly-defined pedestal, and at the same time leave an opening between the groups, showing rich and ornate plantations, which always contrast so favourably with works of art and architecture. QUONDAM.

*** Our correspondent seems to have overlooked a suggestion to the same effect made in our pages some time ago by Mr. James Fergusson. In truth, however, the idea has occurred to many observers, and is spreading.

BUILDING IN BITUMEN.

SIR,—"A Builder" addresses some observations and inquiries to you, "before investing" in "Norton's Patent Bituminous Building Construction Company, Limited." The arrangements for granting patents must be curious if the Attorney-General has sanctioned an application for a patent for building with bitumen. Six or seven years ago I was requested by a contractor to make him an estimate for some waterworks in Yorkshire (Halifax, to wit), and for that purpose he put into my hands the specification, a printed copy of which had been sent to him. The conduits, or some of them, were directed to be built with parpoint wall stones, into the joints of which was to be poured melted pitch, asphalte, tar, or bitumen,—for I forget the exact form in which the material was to be used; and although we do not commonly call a conduit a building, yet one would think that the Attorney-General, in the exercise of his public duty, when this patent was applied for, would consider the use of this material in the manner I have named to be sufficient to preclude the grant of any patent for its use in the manner named by "A Builder."

It is stated that this is the same Mr. Norton who some years ago invented a dangerous pump,—one, it was asserted, that would procure water by being driven into the ground in almost any open space,—or, for the matter of that, in any place whatever, open or not, provided there were water in the ground at all. It was said, at the time of the Abyssinian war, that these pumps were found very useful to a marching army. That may be well understood to have been true, for they marched through an uninhabited country, comparatively with our own; but to introduce such a contrivance to the townspeople of England is a pestilent thing. I am glad to believe that the common sense of my countrymen has been sufficient to prevent any large use of this pump, so far as I have been able to ascertain; but I have known inquiries to be made by people living in towns whether they could not procure a supply of water for their household purposes from the porous ground of their back premises by driving down one of these pumps, the inducement being, of course, that the pumps were cheap, and the evil being that the men were ignorant, and believed in prospectuses. AN ENGINEER.

COLOURED GEMS.*

THE name of *emerald* is applied to three different minerals:—

1. The green variety of corundum known as oxide of aluminium is the *Oriental* emerald, as found in Ceylon, Ava, Pegu, &c. The colouring matter is derived from the presence of a metallic oxide, and it is only another name for a green ruby or a sapphire of green colour. I have seen an emerald, not exceeding half an inch square, valued at 500*l*.

2. A more common stone, but not less precious when of choice character, is a variety of beryl, which is a crystallised anhydrous silicate of alumina with glucina. The gem is preferred of a deep grass-green colour, arising from the presence of animal matter,—a hydro-carbonate, derived from fossilised organic remains belonging to the lower cretaceous formation. It is found associated with black micaceous schists.

The pale varieties of green beryl are called *aqua-marines*,—pretty, but not costly. The beryl is met with in crystals of enormous size, but of inferior quality, varying from leek-green to a waxy yellow.

3. Prismatic *emerald* is a name for the variety of mineral called *euclase*. It is a hydrated silicate of alumina and glucina. Examples may be found of various colours. A. HALL.

* See *Builder*, p. 739, *ante*.

THE ANT NUISANCE.

SIR,—Your admitting the letters of "B." and "W. B.," on the subject of the ant nuisance in houses, induces me to hope that, now the question is raised, it may not be lost sight of until a satisfactory cure is mentioned.

"W. B.'s" suggestion of sulphur fumigation is out of the question in very many cases. Will any one tell us of something that ants *dislike*, and that will drive them back into the gravel under the house, whence they come? I am alluding to the little black ant. It infests larders and basements, generally of perfectly *new* houses, in London, and because it does so it is a subject quite proper for treatment in the *Builder* as to how to get rid of the nuisance.

I hope you will not allow this matter to pass until it is thoroughly sifted, and oblige,

A LONDON HOUSEHOLDER.

SIR,—A correspondent has asked to be informed of a remedy for swarms of ants, by which his house is infested. A similar inquiry was made a year or two ago by a correspondent of the *Times*, and in reply numerous remedies were given by various persons, who had tried and found them all effectual. I subjoin some of them for your correspondents' information:—

1. The wing or wings of a turkey or other similar animal, with the feathers left on, and laid in the places frequented by the ants. Swarms of the insects attach themselves, and they are then destroyed by dipping the wing in boiling water, and then again placing it to attract others.

2. Place saucers filled with weak rum and water, sweetened with brown sugar. The insects are attracted by myriads; and the liquor must be changed daily.

3. Sprinkle the cupboards and other places infested with strong liquid ammonia, — the "*liquor ammoniæ fortiss*,"—which will also destroy black beetles.

4. Washing the places infested with a solution of alum causes the insects to disappear.

5. Sprinkling the places infested with creosote.

6. Placing camphor in small muslin bags, and hanging these in the infested places, causes the insects to disappear.

7. Soft soap and water smeared in the various haunts of the insects expels them rapidly.

The various parties giving these remedies all state they have extirpated these pests by the means stated. C. H.

ACCIDENTS.

Yeovil.—The thoroughfare in Middle-street has been stopped through the dangerous condition of the Temperance Hotel. The wheels of a trolly broke through the road, and discovered a rather alarming subsidence of the soil underneath the metal crust of the road. Late in the evening there was a more serious accident of the same kind immediately in front of the Temperance Hotel. The road soon caved in for half the width of the street, the doorstep of the house gave way, and then the foundation on the right-hand side of the doorway became exposed and quickly sank several inches. The house is a three-storied building of brick, and the effect of the sinking foundation was at once visible in threatening cracks of the brickwork front, with breakage of window-glass and bulging of the window-frames. Two or three builders and a number of workmen were summoned to the rescue, and the superintendence of the work was intrusted to Mr. F. Cox. Under his directions short pieces of baulk timber were placed in the chasm as supports to the foundation, and the face of the house was shored up with long planks. The town surveyor and other officials visited the spot. The house still stood; but the tenant has removed his furniture. The house projects beyond the line of a recent improvement in the street; but we doubt whether the owner sees it in this light. The house was built on the edge of an old sewer, which was only partially filled up when the new sewer was put down. The excavations on that occasion, and again when the water mains were laid, disturbed the soil under half the road; and probably for some time past the soil has been washing away by the action of water from the old drain, recently assisted by escapes from the water-pipes that burst when first charged. Anyhow, many cartloads of earth must have disappeared from this site before such a tunnelling could have been formed under the road as has now been discovered.

Barrow.—A number of men were engaged in the erection of a bridge at the terminus of a loop line from Marsh to Ormsgill, and for the purpose of facilitating the work, a scaffold had been erected, upon which a crab was placed. At the time of the accident four men were on the scaffold, ready to lower, by means of the crab, a large piece of stone which had been swung, and four others were underneath prepared to place the stone in position on one of the piers. Without any warning, the structure fell with a crash. The men working underneath managed to escape uninjured, but the other four were very seriously hurt, and one of them now lies at the hospital in a very precarious state.

Hanley.—A loop line of railway is to pass under the bottom part of Waterloo-road, just outside the borough of Hanley. The earth has been excavated for some distance under the road and props placed under the portion undermined. As a horse and cart were passing over this spot the road gave way, and the horse and part of the cart fell in. On their being extricated the horse was found to be much injured by its fall of from 17 ft. to 18 ft., and it died in about half an hour. The cart, which was empty at the time, was damaged. The insecure part of the road was at once fenced off. It is supposed that the supports did not extend far enough under the road, and that the portion which gave way was not sufficiently supported.

HOSPITAL PROVISION IN ROUEN.

SIR,—I have lately read a History, &c., of Rouen, translated (abridged, yet considerable) into English, perhaps rather a topographical curiosity, from foreign press.

So much has been said of the history of this renowned city, that I will not enlarge on it. But its "hospital" charity seems noble, even by comparison with London and our principal cities and towns, and even to be further suggestive.

The number of beds in the Hôtel Dieu, for a city population, omitting vicinity of (I believe) within 120,000, is *six hundred*, nearly approaching the number in Bartholomew's, 720.

But this is not all. There is a large subsidiary hospice for incurables also. Patients are kept in the first for six months, and then only, if uncured, transferred to the other. We have, sir, so little done yet for incurables, that I must humbly think this might be worth the notice and recollection of some of our best philanthropists.

Might I crave this opportunity, as not many more might be accorded me, of mentioning a medical anecdote (not hackneyed), highly honourable to, though I believe far from unusual with, that honourable profession, the more that I have had the pleasure of private confirmation of similar spirit in Abernethy, who, often rough eccentrically (intentionally) with the rich, was never so with the poor; always treating them with tenderness.

A cardinal prime minister, on sending for the most eminent surgeon of his day, said to him, "You must not expect to treat me as roughly as you do your poor wretches at the Hôtel Dieu." "My lord," answered the surgeon, with dignified consciousness, "every one of those 'poor wretches,' as your eminence is pleased to term them, is a prime minister in my eyes."

J. D. P.

SUBJECTS FOR PRIZE PAPERS.

AMONGST the subjects on which the Council of the Institution of Civil Engineers invite communications are the following:—

Account of the Progress of any Work in Civil Engineering, as far as absolutely executed (Smeaton's Narrative of the Building of the Eddystone Lighthouse may be taken as an example).

On the Application of Graphic Methods in the Solution of Engineering Problems, and in the Reduction of Experimental Observations.

On the Elasticity, or Resistance to Deflection, of Masonry, Brickwork, and Concrete, with Observations on the Deflection of the Tops of Bridge Piers, by unequal loading on the Arches abutting on them.

On the Methods of Constructing the Foundations of some of the principal Bridges in Holland and in the United States.

On Bridges of large span, considered with reference to examples, now in progress or recently completed, in the United States, including an account of the testing, and of the effects produced by variations of temperature.

On the Theory and Practical Design of Retaining-walls for sustaining Earth or Water, and on Experimental Tests of the Accuracy of the various Theories.

On the Use of Concrete, or Béton, in large masses, for Harbour Works and for Monolithic Structures.

On the various Modes of Dealing with Sewage, either for its disposal or utilisation.

On the Separate System of Sewering Towns, with a detailed description of the works in a town to which this system has been wholly or partially applied, and particulars as to the results.

On the Ventilation of Sewers, with a *résumé* of the experiments as to the motion, pressure, &c., of gas in the sewers.

On the Constant Service of Water Supply, with spec

reference to its introduction into the metropolis, in substitution for the intermittent system.

On Street Railways and Tramways through Cities and Towns, and on the best mode of working them.

On the Present State of Science in regard to the Manufacture of Gas for the Purposes of Illumination.

On the Practice and Results of Irrigation in Northern India.

On the Manufacture of Iron and Steel as now pursued: the effect on strength and tenacity of the admixture of substances with the ore.

IRRIGATION AND STREET CLEANSING.

Mr. Brown (of Messrs. Isaac Brown & Company, Edinburgh), to whom we alluded on p. 789 has, by desire of the Duke of Sutherland, exhibited, at Dunrobin, the capabilities of the system of irrigation which he recently patented. The *modus operandi* is as follows:—Lead pipes, having perforations about a yard apart, are sunk in the earth. The water, turned on at several taps, and, forced through the jets in the pipes, is thrown up like spray. On the pressure obtainable depends the distance to which the water may be thrown. On a piece of ground near the main avenue to the Castle, and also on the garden terrace, Mr. Brown introduced his plan. The water was procured from the main by which the Castle is supplied. The grass at the avenue before the application of the process had a dry, parched appearance, but since, it has become green and luxuriant. In addition to the water appliance, Mr. Brown uses a top dressing of manure of his own preparation. The change effected is best seen by contrasting the appearance of the grass operated on and that growing all round it; and it should be mentioned that all this has occurred within a fortnight. There are now feeding on the pasture twenty-five sheep to the acre. The same results are apparent on the terrace, and Mr. Brown has published a variety of statements showing the benefit of this system relative to the reclamation of straths, so that they might be made available not only for the breeding but for the fattening of sheep, and he contemplates its use for watering the public streets. The duke explained the system to the Queen, who saw it in operation, and expressed her admiration of its simplicity and utility.

The cleansing of the streets of Paris is an affair of greater importance than many people would imagine. It costs the municipality more than four millions of francs per annum. There are 11,000,000 square mètres to be swept every day, of which 2,220,000 are at the cost of the municipality, 5,520,000 at the cost of such owners of property as do not subscribe, and 3,560,000 undertaken by the municipality for the subscribers. The average cost is 29½ centimes per annum. A bill is about to be submitted to the Assembly for compelling all proprietors to subscribe to the cleansing of the streets.

MASTERS AND MEN.

Mr. Franklin writes to the Society of Arts' *Journal*, suggesting that there should be such diversities of engagement between employer and employed as might secure us against desertion by all simultaneously.

"The following," he says, "seem to be practical diversities of the kind required, and we invite the suggestions of others:—

1. In the case of large contracts, often lost to English firms because they are afraid to rely upon a calculable scale of wages, let the hands be invited by the heads to engage for the term required by the enterprise, and at a normal rate of wages, either subject to adjustment by cost of living, as in the case of corn-rents, or otherwise, with recourse to arbitration in need, and in manner made binding in advance.

2. Modes of sub-contract, as in mining enterprise, in railway construction, &c., a mode found most successful by the Postmaster-General, *vide* his last report.

3. Spontaneous or other modes of supplementing wages, by contributions to sick or superannuation funds, to life insurance or mutual guarantee funds, to building or common supply unions, to savings-banks, or other provident associations, all more or less for advantage of workers, in concert with the same employers. Instances of such inducements to *employés*, plus salaries or wages, abound, both in the public service, in banks, and in other first-class establishments.

4. Reversal of relations between capital and labour, so as to enable combinations of workmen to take lease of factories, hire management, and borrow capital, in security of the products of their labour, less 'subsistence money.'

5. Co-operation of heads and hands on the joint-stock principle, as it exists both at home and abroad, with improved methods of audit."

STRONG ROOM FOR THE NORTH-EASTERN BANKING COMPANY, NEWCASTLE.

At the premises now in course of fitting up for this company, under the superintendence of Mr. Matthew Thompson, architect, provision has been made in the course of the alterations for a strong room of rather large dimensions: 8 ft. by 7 ft. by 7 ft. high, is the size, and the construction is as under:—The outer casing is of half-inch plate-iron; then there is 1¾ in. air-space, and inside a casing filled with fireproof material, 2¾ in. thick. The top and the bottom are protected in a similar manner. At the back of the interior a space is divided off, and called the inner treasury; that is the full size of the safe, and 20 in. deep, and is designed for the deposit; and around the sides of the remainder are iron shelves, 20 in. wide for cash and deed boxes. The safe is enclosed by a pair of folding doors, 6 ft. 2 in. by 4 ft. 10 in., throwing twenty-three bolts of 3¾ in. by ¾ in. all round the circumference, as well as at the meeting style. A peculiar arrangement has been made by which the striking bar being removed, or unscrewed, either door can be opened independently of the other. The outer plate of the doors is ¾ in. wrought-iron, next comes ½ in. thickness of steel, then a plate of ¾ in. and inside the fireproof composition. The safe is approached by a lobby, a complete case of ¾ in. wrought plate-iron, bolted together and to the safe; the wall in which is the door is 20 in. thick; on the inner side are a pair of folding open grills, and on the outer side an external door, of the character commonly used for bankers' purposes. It will be seen that to get access to the inner treasury, four doors,—the external door, the grill, the door of the safe, and the door of the treasury proper,—have to be opened. The work is now completed, and the fixing will begin in a few days. The work has been carried out by Messrs. Chubb & Son, of St. Paul's Churchyard, and their patent locks are affixed to the doors throughout.

SCHOOL-BUILDING NEWS.

Rotherhithe.—The memorial stone of new schools, to be called the Gomm Schools, has been laid here by Field-Marshal Sir W. Gomm, K.C.B. The schools are in connexion with the new Church of St. Barnabas. The design, by Mr. G. Legg, is Gothic, and the building will accommodate about 400 children. The site is in Plough-road, and has been granted at a low sum by the Commercial Dock Company; and the total cost is estimated at 2,600*l.*, of which 2,000*l.* have already been subscribed. A piece of land was originally given by Sir W. Gomm, but the ground was acquired by the East London Railway at a cost of 800*l.* under the powers of their Act, and the present site was then obtained. Including the value of the original site and a donation of 200*l.*, Sir W. Gomm has presented 1,000*l.* in aid of the funds.

Bristol.—St. Gabriel's Schools, Easton, have been opened. The site was given by the Ecclesiastical Commissioners and the lease-owners, Messrs. Jones & Hamilton. Having ascertained that the ground was made ground, and bad for foundations, they inquired, and found that the foundations would not cost more than 90*l.* They entered into a contract with Messrs. Wilkins & Son, builders, of Surrey-street, for 1,260*l.* for building the school. This did not include the extra foundations; and, relying on the assurance of the architect that they would not cost more than 90*l.*, they appealed for 1,560*l.*: the contract, 1,260*l.*; foundations, 100*l.*; architect's commission and law expenses, 100*l.* They had secured nearly the whole of the amount (1,560*l.*), and they were then astonished to hear that the extra foundation, instead of costing 90*l.*, would cost 350*l.*, making the total building and fitting up cost 1,810*l.*, instead of 1,560*l.*, leaving 250*l.* to be cleared off. This sum must be raised before they could get either the Government grant or that of the National Society. The schools will accommodate 550 children.

Henstridge.—New schools have been opened here. The buildings are centrally situated on the turnpike road near Henstridge Ash, being about equally convenient for Henstridge and the hamlet of Yenston. There are two commodious schoolrooms, and a master's residence, built of the local forest marble stone, rock-faced, with Doulting dressings, and roofed with red and dun tiles in horizontal bands. Behind is a walled playground for the boys, and another for the girls, with the necessary offices; and there is also a garden for the master. Entrance to the building is given by two porches, which are covered by lean-to roofs, being, in fact, continuations of the main roof. The schoolrooms are lighted and ventilated by means of large windows, square-headed, stone mullioned, and fitted with movable casements; and there are also zinc ventilators in the ceilings. They are to be heated by open stoves, the flue-pipes of which are carried through recesses in the walls, covered by ornamental gratings. The dimensions of the principal schoolroom (intended for a mixed school under a master) are 60 ft. by 18 ft.; and the infants' schoolroom, which has the usual gallery at one end, is 36 ft. by 18 ft. The architect who designed and superintended the works was Mr. H. Hall, of London; and the builder, Mr. A. Reynolds, of Milborne Port. The total cost was about 1,300*l.*, including site, &c. The schools are calculated to accommodate 136 in the large room and 80 in the infant-room, being the full number for which accommodation is required by the Education Department, the population of the parish being about 1,300.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Manchester.—The new Roman Catholic Church of St. Francis of Assisi, situated in Gorton-lane, has been opened, Archbishop Manning, and other dignitaries of the Roman Catholic Church, taking part in the opening ceremony. The church has been in course of erection for the last six years, and it belongs to the members of the Franciscan community, who settled in Gorton in 1862. Mr. E. Welby Pugin is the architect, and the style adopted is the Geometrical, somewhat modernised. The building is 184 ft. in length, 72 ft. in width, and 98 ft. in height. Though the exterior is plain,—being built, for the most part, of red brick, with stone dressings,—the stonework and sculpture of the interior render it ornate. The whole of the carving, which is symbolical, has been designed by Father Cuthbert, one of the resident fathers, and executed by Messrs. Williams & Milson, of Manchester. Above the altar is a stained-glass window from the works of Messrs. Edmundson & Son, Manchester. It represents historically the life of St. Francis, and is the gift of the Rev. G. Dunn. The other two chancel windows are destined to contain a representation of the lives of St. Clare, and of St. Louis of France, so that the three chancel windows will represent the three orders founded by St. Francis. The Lady Chapel, on the south of the chancel, will contain a stained-glass window, by Mr. Casalani, of St. Helen's, the subject being the Immaculate Conception. This is the gift of Mr. G. F. Kighley. The chapel corresponding to this, on the north side of the chancel, is to be dedicated to St. Joseph. From it two doors lead to the sacristy and cloisters. These last are constructed in the ancient style, and are 100 ft. long. On the north side of the church six confessionals are provided, which are designed in the architecture of the building. The main columns of the interior are of Halifax stone; the carved and ornamental work of Bath stone; and the chancel columns of red Mansfield stone. The chancel will be lighted by a corona and lamp of ornate character, which is being manufactured in Birmingham: Mrs. Fossata, of Manchester, is the donor. Eight standards, each 13 ft. high, will light the nave. These have been made by Messrs. Hibbert & Co. Messrs. Sidebotham & Co. have supplied the benches. Brother Patrick, one of the resident priests, has superintended the erection of the building.

Haverfordwest Congregational Chapel Competition.—The plans of Messrs. Lawrence & Goodman, Newport, Monmouthshire, have been selected.

Miscellanea.

The Great Eastern Railway Extension. Last week the Society of Engineers paid a visit to the works of the Great Eastern Railway Extension to Broad-street, and the Locomotive works of the North London Railway at Bow. The visitors assembled at Broad-street, and first examined the site of the intended new station, which will cover an area of 9 acres. The station will have a frontage of nearly 300 ft., and will be laid out with eight platforms, covered in by an iron and glass roof, in four spans. The lower portions of the side-walls have been built in excavated trenches, and the 9 acres of soil will next have to be cleared out to a depth of about 15 ft. The platform-level will be 11 ft. below the level of Broad-street, and will be approached from the roadway by an easy incline. The line will eventually be connected with the Metropolitan Railway. From Broad-street the line will be carried on the level for about three-quarters of a mile, to Brick-lane, where it will pass under the existing viaduct of the Great Eastern main line. From Brick-lane the line has a rising gradient of 1 in 70 to its junction with the main line, at Bethnal Green. The works at this end of the line are in a forward state, a station, between Commercial-street and Bishopsgate-street, for the relief of the present main-line station, being nearly ready for use. The construction of this extension line involved the diversion of the high-level sewer which intersected the route, but which has now been carried direct from Norton Folgate, under Bishopsgate-street, to Gracechurch-street, where it rejoins the original main sewer. Mr. Edward Wilson is the engineer, and Messrs. Lucas, Bros., are the contractors for the line, which is expected to be opened about a year from the present time.

A Case for Estate Agents.—At the Leeds County Court, before Mr. T. H. Marshall, the judge, Mr. Joseph Lawton, of Wortley, estate agent, sued Mr. John Redshaw, of Armley, gentleman, for 10*l.* 10s., for commission on sale of land in Tong-road, Armley. Mr. Malcolm (for Mr. Granger) appeared for the plaintiff; and Mr. W. Emsley for the defendant. The plaintiff stated that in May last he sold 2,600 yards of land for the defendant, and drew up a contract, which was signed by the purchasers, the conveyance having to be completed on the 1st of July. The defendant agreed to give him 10*l.* 10s. for commission, which was to be paid on the sale, and he had applied for the same several times, but the defendant refused to pay, as the conveyance had not been completed. Mr. Emsley, for the defence, said his client denied that the commission was to be paid until the land was paid for, and, unfortunately, owing to the wording of the contract for sale, which had been drawn by the plaintiff, it was doubtful whether it could be enforced against the purchasers. The law was clear that an agent was not entitled to his commission until the purchase-money was paid. His Honour said that no doubt that was so, unless there was an agreement between the parties to the contrary, and in this case the plaintiff stated that the commission was to be paid when he had sold the land; but the defendant's evidence was, that no commission was to be paid until the purchase-money was received and the conveyance completed. Neither of the parties being corroborated, he should nonsuit the plaintiff, each party paying his own costs.

Glass in Exeter Cathedral.—We are informed that an entire clearstory window, precisely similar in character to the beautiful window still in its place (though sadly mutilated), opposite the Bishop's Throne, has been found in the Minstrels' Gallery. The old leading and the principal portions of the glass remain, so that the window can be well restored by an intelligent glass-painter to its original state. This discovery affords convincing proof that the glass of the clearstory of the cathedral at least (if not also in the aisle windows), was of light and delicate *grisaille*, free from gaudy colour and dark opaque glass, and well calculated to display the architecture of the cathedral.

Railway Union.—An association has been formed between twenty-seven companies, representing 5,535 miles of railway, in Germany, for the purpose of establishing a common charge to defray all expenses and indemnities arising out of accidents of every description.—*Mechanics' Magazine.*

Proposed New Gaol and House of Correction for Bristol.—A letter has been received by the Mayor of Bristol from the Secretary of State, enclosing a report from Mr. Briscoe, the inspector of prisons, to the effect that nothing has yet been done to adapt the city gaol, or more than a portion of the house of correction, to the requirements of the Prisons Act, 1865, and that both prisons are unfit for the confinement of prisoners, and therefore that immediate steps may be taken by the authorities to build a new gaol and house of correction. On Wednesday a very large committee met at the Council House to take this communication into consideration. The committee included the gaol committee, who are members of the town council, and a good many magistrates who were associated with them; and, after a very long discussion, a sub-committee was appointed to wait upon the Secretary of State and point out to him the very heavy pecuniary burdens under which the city is now labouring, and that the gaol, although not fitted up under the requirements of the last Prisons Act, is healthy, and in all respects, in the opinion of the committee, adequate for its purposes; and to ask, under those circumstances, that the order, if not withdrawn, might be suspended until they are better able to bear the expense. The committee were requested, in the event of an unsatisfactory reply being given to this proposal, to ask if the Secretary of State would sanction the erection of a new gaol and house of correction on the site now occupied by the city gaol.

Japanese Progress.—The Japanese are an interesting, and now, at least, a progressive people. They are decidedly clever: the bronzes especially which the Duke of Edinburgh exhibited at the Kensington Museum were remarkable. Sometimes, however, they are too clever by half, as an anecdote in the Marquis of de Beauvoir's "Voyage round the World," translated by A. & H. Stephenson, will show:—"The Japanese, who are as thoughtless as they are bold and enterprising, amiable, but as simple as children, and who believe they know anything when they have seen it once, threw themselves eagerly into steam navigation. They bought a number of vessels, and insisted on managing them themselves. They obtained one from the firm of Dent, a splendid ship,—the *Laimoun*. It arrived one morning in the roads, and at midday they had turned out all the European sailors and engineers; and, sole masters of their vessel, off they went at full steam. So far so good; but when they wanted to stop her,—impossible: they did not know how. Then our imprudent friends put the helm aboard, and began to turn round constantly in a circle, calling out for help, to the great delight of all the crews in the roadstead, till one of our men-of-war, taking pity on them, sent them a boat with an engineer to stop the insane engines."

Setting a Drawing.—If a drawing is worth anything, it surely is worth *setting*, that is, fixing the lead or chalk with which it is drawn, so that, under ordinary treatment, it cannot injure by rubbing. For highly-finished drawings, or where the chalk or pencil has been very liberally applied, it will be better to proceed in this way:—Nearly fill a shallow dish or tray, somewhat larger than the drawing, with a weak solution of gum-water, or—which may sometimes be more convenient—a mixture of milk and water, half of each; pass the drawing carefully through the mixture (face uppermost) backwards and forwards; then fix it up on the wall by a corner to drip and dry; or the drawing may be pinned down to a board, held on an incline over a dish, and the milk and water poured over it with a spoon, beginning at the top; it is necessary to see that all parts of the drawing have been passed over. If the drawings are merely outlines, or having very little shading over them, then the fixing medium may be passed over *the whole paper* with a broad, flat camel-hair brush. With careful treatment, this method of preserving drawings will be found to be quite satisfactory.—*Cassell's Popular Educator.*

The Surveyor of Winchester.—At a meeting of the town council, held on the 3rd inst., Mr. John James Lancefield was unanimously elected city surveyor. There were thirty-five applications for the appointment.

The Building Trade in Sheffield.—There has been a general advance of 5s. per 1000 in the price of bricks at Sheffield. The building trade is stagnant in this town in consequence of the advance in the price of materials.

The Holborn Valley Improvements.—A local statute of last session authorises additional works in connexion with the Holborn Valley and Farringdon Market improvements. There are two pieces of ground near St. Sepulchre's Church, the keeping of which open and unbuilt upon is desirable and advantageous to the public. It is declared to be just and reasonable that the cost of such public improvements should be borne by the parish and the Corporation. By one section eight weeks' notice is to be given to the labouring classes of land required on which they live. By another, the Corporation may apply any funds belonging to them (not being trust-money) in erecting on any lands acquired by them for the Holborn Valley improvements, or for the purposes of this Act, improved dwelling-houses or lodging-houses for mechanics and other persons of the working classes who have been or may be displaced by improvements effected or to be effected by the Corporation. The City may make additions to the site of Farringdon Market and effect other improvements.

Employment of Children in Brickyards. Joseph Taylor, the lessee of a brickyard at Round Hill, Tipton, was charged with employing Charles A. Taylor, aged eight years and a half, in his brickyard. Mr. Alfred Jones, the inspector of factories for the district, said the case was brought forward to check the universal practice in brickyards of setting children to work when they brought the workpeople's meals. He found the boy in the defendant's brickyard, when he had a large apron on, was without boots or shoes, and was bespattered with clay. The defendant's son (aged 25) stood by, and said the boy would not have been at work had his father been in the yard. Emma Summerfield, a girl employed at the brickyard, stated that the boy came on an errand to her, and wanted to help her; he put on a small apron, and carried a few lumps of clay, when the inspector came up. David Taylor, the father of the boy, said he did not wish the child to work there. The Bench said it was clear that the boy was at work, and the defendant should not have allowed it; and as an example they fined him 1*l.* and costs.

Approaches to the Courts of Law.—The new company, empowered by statute to widen Serle-street and Carey-street, and erect new buildings suitable for the legal profession, will soon hold its first meeting. There are several provisions as to the directors, and the mode of procedure under the statute. The capital is to be 300,000*l.*, in 2,000 shares at 150*l.*, and no shares to be issued until one-fifth part thereof be paid up. The company are empowered to take lands and houses, the compulsory powers of purchase to continue for two years. The widening of Serle-street, as described in the plans deposited with the clerk of the peace of Middlesex, is to be effected within five years, to the satisfaction of the Metropolitan Board of Works; and in the same period Carey-street is to be widened. Further widening of Carey-street and Serle-street is to be at the option of the authorities, and the consideration for such enlargement is to be paid by the Commissioner of Works to the company. There is to be a restriction as to the height of the buildings to be erected by the company fronting Carey-street.

The English Church at Spa.—At Spa, on the 24th ult., the Bishop of Ely, on his way from the Cologne Congress, laid the corner-stone of a new English church. The Belgian Government have always contributed liberally towards the stipend of the English chaplain, but the service has hitherto been performed in a large room at a building called Vauxhall, which was formerly dedicated to the very different purposes of gambling. The want of an English church has been much felt, and a subscription was opened some years ago, which, with the generous aid of the Belgian Government and Town Council of Spa, has at length enabled the promoters to commence the erection. The site selected is beautiful as well as convenient. Messrs. Habershon & Pite are the architects, and Messrs. Blackmore & Morley the contractors. The amount of the contract is 5,560*l.*

The Manchester Concrete Company have had awarded to them a silver medal by the Manchester and Liverpool Agricultural Society, a bronze medal by the Middleton Agricultural Society, and a silver medal by the Altrincham Agricultural Society, at their shows held during the past month of September, for "superior concrete flooring."

Islington.—An appeal was made to the guardians by the contractors for sinking the workhouse well. At the last meeting of the Board a report was received from the special committee appointed to inquire into the subject, recommending that a sum of 500*l.* be paid to Messrs. Baker, by way of compensation, for losses in carrying out their contract. Several members of the Board objected to this proposal: it was admitted that the well was a great success, and would be the means of effecting a large saving to the ratepayors; the Board, however, declined to adopt the committee's recommendation.

Workmen's Club.—A club for the working men of Clerkenwell and its neighbourhood has been opened in Cowcross-street, just opposite to the Farringdon-street Station of the Metropolitan Railway. The fee for admission is a penny daily, or twopence weekly; or if the working man prefers, he can compound for such subscriptions by a lump sum of eighteenpence quarterly. On Monday evenings, and occasionally on other evenings too, lectures of a practical, instructive, and amusing kind are delivered, and concerts are given every Saturday.

Stopping Leaks in Iron Ships.—An ingenious method of stopping leaks in iron ships when at sea, has been patented by Mr. M'Cool. "Safety-plates" are "dished"—that is, made like a dish in shape;—and when the hollow side, lined with india-rubber, is pressed against the plates of a ship, the "safety-plate" fits close, and will keep water out when held firmly in place with screws. By a simple contrivance, when the leak is discovered, means can at once be taken for fitting on the new plate.

Stonehenge: a Suggestion.—The conduct of those who, during the late autumn manœuvres, amused themselves by carving their own miserable names at Stonehenge, has met with severe reprehension. The *Pall Mall Gazette* suggests that the names thus inscribed should be publicly advertised, and that a dummy stone be erected for the express purpose of enabling such visitors to record their names, for public exhibition thereafter in Trafalgar-square, previous to deposit at South Kensington. This plan would, to a great extent, protect the sublime from being defaced by the ridiculous.

Laying the Foundation-stone of a New Church at Bexley-heath.—The foundation-stone of the new Christ Church has been laid by Mrs. Tait, the wife of the Archbishop of Canterbury who was also present. This church, which is to cost about 8,000*l.*, of which, however, 2,000*l.* only have been obtained, is to be built in the Early English style of architecture, and the length of the interior will be 150 ft. clear, by 61 ft. in width. The chancel will be 47 ft. by 21 ft., and the height to the spring of the roof 39 ft., and to the ridge 60 ft. The material used is Kentish rag, with Bath-stone dressings.

The Lacustrine Era in Europe.—Lacustral dwellings have been found in several of the Polish lakes which are now being drained; urns containing ashes have been discovered in them, together with various skulls, declared to be Asiatic *and African*; all of which circumstances tend to prove an antiquity extending beyond the historical times; and go to corroborate one of the chief ideas entertained in recent leading articles in the *Builder*, that Africa aboriginally contributed, in an essential degree, along with Asia, to the peopling of Europe.

The Royal Academy, according to the *Art Journal*, has arranged for another exhibition of the works of ancient masters and of artists deceased in recent times, in the winter of this year; and we are informed they have resolved on following up the plan in 1874. It will probably be an annual exhibition for some years to come. The wealth of the country is almost inexhaustible.

The Fleet Sewer.—The Metropolitan Board of Works have decided to accept the tender of Mr. George Wall, of Kentish Town, to carry out, for the sum of 64,000*l.*, the work of the sewer which it has been resolved to construct for the relief of the Fleet sewer.

Society of Engineers.—The first meeting of this society for the new session will held in the society's hall, Westminster Palace Hotel, on Monday next, when a paper will be read on "Telegraphic Batteries," by Mr. E. G. Bartholomew.

Printing in Enamels on Porcelain.—A machine has recently been invented by a citizen of New Haven, Conn., for printing in coloured and gilt enamels on china and pottery, which, it is claimed, will greatly reduce the cost of the process.

The Escurial has been struck by lightning, and is in flames, as we go to press.

TENDERS

For the erection of a building in Willow-walk, Shoreditch, E., for Messrs. Smith, of Queen-street. Mr. R. P. Notley, architect:—

McLachlan	£8,948 0 0
Macey	8,620 0 0
King & Son	8,570 0 0
Myers & Sons	8,419 0 0
Turner & Sons	8,374 0 0
Newman & Mann	8,326 0 0
Perry, Bros.	8,277 0 0
Browne & Robinson	8,166 0 0
Hart	7,885 0 0
Eaton & Chapman	7,690 0 0
Morter	7,637 0 0

For stabling for Mr. A. Hector, Worcester House, Cuddington, Surrey. Messrs. John Giles & Gough, architects. Quantities by Mr. Goode:—

Jocelyne (accepted)	£971 0 0

For alterations and repairs to No. 1, Gloucester-street, Haggerston, for Mrs. Baker. Messrs. Ebbetts & Cobb, architects:—

Poulson	£216 0 0
Paine	159 0 0
Ferne (accepted)	145 0 0

For rebuilding Nos. 2 & 3, Gloucester-street, Haggerston, for Mrs. Baker. Messrs. Ebbetts & Cobb, architects:—

Paine	£702 0 0
Poulson	580 0 0
Ferne (accepted)	475 0 0

For new schools, Beazley-crescent, Old Ford, for the London School Board. Mr. Keith D. Young, architect. Quantities supplied by Mr. Sidney Young:—

Newman & Mann	£8,945 0 0
Roberts, Brothers	8,884 0 0
Perry, Brothers	8,804 0 0
Ennor	8,574 0 0
Williams & Son	8,270 0 0
Kilby	8,153 0 0
Henning & Son	8,120 0 0
Dove, Brothers	7,995 0 0
Adamson & Sons	7,651 0 0
Hill & Sons (accepted)	7,548 0 0

For new library, &c., to Park House, St. John's Wood Park, for Mr. J. E. Gardner. Mr. C. Shoppee, architect. Quantities supplied by Mr. Sidney Young:—

Brass	£2,329 0 0
Conder	2,295 0 0
Dove, Bros.	2,195 0 0
Jackson & Shaw	2,100 0 0
Longmire & Burge	2,070 0 0
Macey	2,050 0 0

For new wharf at Rotherhithe, for Mr. J. Brandram Peele. Mr. G. A. Young, architect. Quantities supplied by Mr. Sidney Young:—

Smith & Co.	£9,695 0 0
Myers & Son	9,520 0 0
Dove, Bros.	9,475 0 0
Brass	9,440 0 0
Jackson & Shaw (accepted)	9,160 0 0

For Oval-road School, Croydon:—

Nightingale	£3,909 0 0
Taylor & Sons	3,656 0 0
Walkley	3,605 0 0
Allen	3,040 19 1
Heade	3,196 0 0
Wright, Bros.	3,157 0 0
Waterson & Co. (accepted)	3,045 0 0
Spearing*	2,969 0 0
Peskett & Taylor*	2,961 0 0
Coles*	2,940 0 0
Crooke & Wall*	2,878 16 0

* Withdrawn.

For alterations to the King William the Fourth public-house, Streatham:—

Loat	£920 0 0
Parsons	875 0 0
Mason (accepted)	797 0 0

For alterations and additions to the Prince Regent Tavern, North-street, Walworth. Mr. F. Sparrow, architect:—

Kellaway (accepted)	£612 0 0

For alterations, &c., to the Rutland Arms, Rutland-street, Hampstead-road, for Mr. R. Miles. Mr. C. Bradley, architect:—

Cairns	£179 0 0
Durrant	175 0 0
Berridge (accepted)	175 0 0

For additions to Elmstone Court, near Canterbury, Kent, for Mr. W. J. G. Barrett. Mr. Richard Martin, architect:—

Bridgman, Nuthall, & West	£2,478 0 0
Wilson & Son	2,290 0 0
Jarrett (accepted)	2,187 0 0

For additions and decorations to Ivy Lodge, Maidavale. Mr. H. M. Burton, architect. Quantities by Messrs. Corderoy & Sandall:—

Cracknell	£969 0 0
Ebbs & Son	775 0 0
Nightingale	720 0 0
Mitchell	720 0 0
Timewell	697 0 0

For dwelling-house at Manners-road, Hampstead, for Mr. W. Farquharson. Messrs. Spalding & Knight, architects. Quantities supplied by Mr. Fleetwood:—

Hyde	£1,938 0 0
Simpson	1,822 0 0
Boyce	1,688 0 0
Mann	1,639 0 0
Temple & Foster	1,610 0 0
Brass	1,570 0 0
Wicks & Bangs	1,562 0 0
Carter & Son	1,550 0 0
Scrivener & White	1,528 0 0

For building the Bradley Memorial Hall, Marlborough College, Marlborough. Mr. Street, architect. Quantities by Mr. Poland:—

Dyer	£2,694 0 0
Williams	2,390 0 0
Nightingale	1,998 0 0
Dove, Bros.	1,875 0 0

For the erection of St. Peter's Church, Lordship-lane, Dulwich. Messrs. Banks & Barry, architects. Quantities by Mr. J. Strudwick:—

Crowland	£10,997 0 0
Jackson & Shaw	9,500 0 0
Holland & Hannen	9,237 0 0
Stimpson & Co.	9,170 0 0
Ennor	9,162 0 0
Perry & Co.	8,998 0 0
Myers	8,721 0 0
Patrick	8,650 0 0
Browne & Robinson	8,640 0 0
Ashby & Son	8,485 0 0
Newman & Mann	8,426 0 0
Peto, Bros.	8,397 0 0
Dove	8,375 0 0
Henshaw	8,260 0 0
Mitchell	7,930 0 0
Downs & Co. (accepted)	7,860 0 0

For building a church at Brighton for the Rev. D. Wagner. Mr. Somers Clark, architect. Quantities by Mr. Nunn:—

Purless	£17,088 0 0
Scrivener & White	16,215 0 0
Dove, Bros.	15,755 0 0
Baker	15,357 0 0
Cheeseman	14,650 0 0
Chapel	13,975 0 0
Nightingale	13,977 0 0
Burker	13,460 0 0
Reynolds	11,100 0 0

For interior painting and repairs at St. Michael's Church, Bassishaw, Basinghall-street. Mr. G. Low, architect:—

Mangin	£125 0 0
Pickering & Son	123 0 0
Oakley	100 0 0

For new schools and quarters for children, teachers, master and matron, hospital, fever building, tramp and receiving wards, at the Ross Union Workhouse. Messrs. Haddon, Brothers, architects. Quantities supplied:—

Goodman & Burmore	£11,232 0 0
Pearson & Son	10,874 0 0
Jones & Allen	10,436 0 0
Bowers	9,100 0 0
King & Godwin	8,557 0 0
Welsh & Son	8,550 0 0
Clutterbuck	8,233 0 0
Everal (accepted)	7,949 0 0

For new Congregational chapel at Eign Brook, Hereford. Messrs. Haddon, Brothers, architects:—

King & Godwin	£2,960 0 0
Niblett	2,954 0 0
Lewis	2,890 0 0
Bowers	2,880 0 0
Wood & Sons	2,750 0 0
Welsh & Son (accepted)	2,650 0 0

For alterations and partial rebuilding of premises in St. James-street, formerly known as Crockford's Clubhouse. Mr. C. J. Phipps, architect:—

Bracher & Son	£12,000 0 0
Newman & Mann	11,976 0 0
Simpson	11,897 0 0
Gammon & Sons*	11,512 0 0

Accepted tenders:—

For General Builder's Work.

Simpson (amended)	£11,300 0 0

Ironwork and Rolled Joists.

Dawnay	720 0 0

Scagliola Marble.

Gaul	368 0 0

Kitchen Apparatus, Lifts, &c.

Jeakes & Co.	830 0 0

Sanitary Works, Lavatories, &c.

Jennings & Son	500 0 0

Gas Work and Sunlights.

Strode & Co. (exclusive of fittings)	287 0 0

* This tender was accepted by the architect, but afterwards the contract was declined by Messrs. Gammon, on the ground of insufficiency of time allowed.

For the erection of a detached villa residence, Hornsey lane. Mr. J. W. Reed, architect:—

Mould & Son	£1,935 0 0
Hunt	1,797 0 0
Nutt & Co.	1,512 0 0
Stains & Son	1,496 0 0
Niblett & Son	1,490 0 0
Nightingale	1,444 0 0
Gribble	1,396 0 0
Jarvis & Co.	1,385 0 0
Hawkes	1,370 0 0
Boden	1,365 0 0
Wagner	1,352 0 0
Carter	1,335 0 0
Bowley	1,275 0 0
Blease	1,223 0 0
Cawdron & Corne	1,191 0 0
Sale	1,148 0 0
Warr	1,075 0 0

For additions to a house at Hillingdon, Middlesex. Mr. Robert Henson, architect:—

Howe	£335	0	0
Janes	317	10	0
Kearley	308	0	0
Willans	283	0	0
T. & G. Over (accepted)	268	10	0
Borton (too late)	259	0	0

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BOROUGH of SALFORD.—BOROUGH ENGINEER and SURVEYOR.—The Corporation of Salford require the SERVICES of a BOROUGH ENGINEER and SURVEYOR. He will be required to devote the whole of his time to the duties of his office. Salary, 600l. a year. A list of the duties may be had from the Town Clerk, Town-hall, Salford. Applications, with testimonials, endorsed "Application for Engineer and Surveyor," to be sent in on or before FRIDAY, the 11th day of OCTOBER, 1872.—By order, EDWIN ANDREW, Town Clerk.
Town-hall, Salford, September 24th, 1872.

THE PUBLIC HEALTH ACT, 1872.—CITY of LINCOLN.—ELECTION of SUB-SURVEYOR.—The Council of the City of Lincoln, at a Meeting to be held on the 22nd day of October next, will proceed to the ELECTION of a SUB-SURVEYOR. He will be required, under the direction of the Surveyor, to discharge all the duties belonging to the office of Surveyor to the Council as a Sanitary Authority under the Public Health Act, 1872; and especially to take charge of, and be responsible for, the due execution of the Works of Scavenging, &c. which will be carried out by the Council. Salary, 150l. per annum. The person appointed will be required to devote the whole of his time to the duties of his office. Candidates must deliver their applications to me, in writing, on or before SATURDAY, the 19th OCTOBER. A copy of the bye-laws and resolutions of the Council, defining the duties of the Sub-Surveyor, may be seen at at my Office.
H. K. HEBB, Deputy Town Clerk.
Lincoln, 30th September, 1872.

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